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CONFERENCE ON A LONGITUDINAL STUDY OF EXPRESSIVE BEHAVIOR IN THE ARTS.
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A 2 1/2-DAY CONFERENCE WAS HELD TO EXPLORE AND ASSESS THE PROMISE OF A LONGITUDINAL STUDY OF EXPRESSIVE BEHAVIOR IN THE ARTS. TEN WELL-KNOWN ARTIST-TEACHERS AND 10 WELL-KNOWN BEHAVIORAL SCIENTISTS WERE INVITED. AS PRACTITIONERS THEY HAD OPERATED AS ARTISTS AND AS TEACHERS, OR AS SCIENTISTS WHO HAD DEALT WITH THE ARTS OR EXPRESSED INTEREST IN DOING SO. THE ARTIST-TEACHERS PRESENTED SHORT WORKING PAPERS, OUTLINING THE PRESENT STATUS OF THEIR KNOWLEDGE ON THE GROWTH AND DEVELOPMENT OF EXPRESSIVE ABILITY. THE WORKING PAPERS WERE INCLUDED IN THE CONFERENCE REPORT. DISCUSSIONS AND SUMMARIES OF PARTICIPANT VIEWPOINTS WERE PRESENTED. IT WAS CONCLUDED THAT MORE THOUGHT AND STUDY ARE NECESSARY BEFORE THE PROMISE OF A LONGITUDINAL STUDY OF EXPRESSIVE BEHAVIOR IN THE ARTS CAN BE EFFECTIVELY ASSESSED. IT WAS AGREED THAT STUDIES OF THE NATURE OF SYMBOLS AND SYMBOL-MAKING OFFER PROMISE TO RESEARCH IN THE ARTS. (JC)

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CONFERENCE ON A LONGITUDINAL STUDY OF EXPRESSIVE BEHAVIOR IN THE ARTS

Cooperative Research Project No. V-001

Jack Morrison

University of California, Los Angeles

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CONFERENCE ON A LONGITUDINAL STUDY OF
EXPRESSIVE BEHAVIOR IN THE ARTS

Introduction

Jack Morrison
University of California, Los Angeles

Both artist and scientist may be seen in a mutual struggle--to expand consciousness. The struggle is little understood but certainly felt and expressed, and, bringing artist and scientist to a conference joining them to consider a problem in their mutual interest, has long been a dream of mine. The consideration of the feasibility of a longitudinal study of creative behavior in the arts seemed like a promising way to bring my dream out of the night and into the day. At least the Arts and Humanities Branch of the U.S. Office of Education thought enough of my proposal to finance the meeting as a Developmental Conference using funds of the Cooperative Research Act. This interest, along with the sponsorship of UCLA's University Extension, made it possible to bring our group together at the Santa Ynez Inn in Pacific Palisades, California for 2 1/2 days, February 18-20, 1965.

The charge to the Conference was to assess the significance as well as the feasibility of a longitudinal study of the development of expressive behavior in the arts.

Anticipated outcomes from the Conference included these objectives:

1) channels of communication would be set-up for artist-teachers and behavioral scientists;

2) the role of our present educational system as it affects artistic growth would be explored;

3) 'areas in which research could be begun would be identified;

4) participants would be stimulated to continue or to begin their own research in the field;

5) knowledge of human development, psychology and sociology would be brought to bear on the problem of understanding artistic growth in the human being;

6) the feasibility of a longitudinal study of the development of expressive behavior in the arts would be tested;

7) a step-wise procedure would be outlined to initiate a major investigation; or

8) alternative proposals would be recommended.

Ten artist-teachers and ten behavioral scientists were invited. As practitioners they had operated as artists and as teachers or as scientists who had dealt theoretically and/or experimentally with the arts or represented interest in doing so. Here they are:

Artist-Teachers

Albert Christ-Janer
Painter and Dean
Pratt Art Institute
Brooklyn, New York

Kenneth Graham
Stage Director
and Chairman
Speech and Theater Arts
University of Minnesota

Jerome Hausman
Artist and Chairman
Art Education
Ohio State University

Theodore Hoffman
Stage Director and
Research Associate
University of Minnesota

Mantle Hood
Musician and Director
Institute of Ethno-Musicology
University of California
Los Angeles

Andrew Imbrie
Composer, University
of California, Berkeley

Dorothy Madden
Dancer and Choreographer
University of Maryland

Daniel Mendelowitz
Artist and Art Educator
Stanford University

Behavioral Scientists

Frank Barron
Research Psychologist
Institute of Personality
Assessment and Research
University of California
Berkeley

Howard Becker
Sociologist and
Musician, Institute
for the Study of Human
Problems, Stanford
University

Mihalyi Csiezentmihalyi
Department of Education
University of Chicago

John Flanagan
Psychologist and President
American Institute of
Research, Pittsburgh

Joseph Glick
Psychologist
Yale University

J. P. Guilford
Psychologist, University
of Southern California

John Horton
Sociologist, University
of California, Los Angeles

William B. Michael
Psychologist and Editor
University of California
Santa Barbara

Kenneth Rexroth
Poet and Painter
San Francisco

Norman L. Rice
Painter and Dean
College of Fine Arts
Carnegie Institute of
Technology

Daniel Slobin
Psychologist, University
of California, Berkeley

Kaoru Yamamoto
Psychologist
Kent State University

Robert Crawford
Observer
The Rockefeller Foundation
New York, New York

Harlan Hoffa
Observer
Arts and Humanities Branch
U.S. Office of Education
Washington, D.C.

Except for the topic, "A Conference to Explore and Assess the Promise of a Longitudinal Study of Creative Behavior in the Arts," the Conference had a minimum of structure. In the letter inviting the participants this paragraph was included:

> Although the announced objective of the Conference is to explore the potentialities of a longitudinal study, the Conference is actually an unfettered quest seeking an approach or approaches towards sound, basic research in creative expression in the arts. The stir of growing interest in the arts throughout our country desperately needs a base for subsequent and effective application to teaching and curriculum building at all levels of education. I think the problem is a magnificent one, and this assault upon it promises to be stimulating and eminently enjoyable as well as productive.

After a participant had accepted my invitation to join in the Conference, he received the following:

Suggested Proceudres for the UCLA Conference
on Creative Behavior in the Arts

In The Process of Education, Jerome Bruner has said:

> "In a culture such as ours, where there is much pressure toward uniformity of taste in our mass media of communication, so much fear of idio-syncratic style, indeed a certain suspicion of style altogether, it becomes the more important to nurture confident intuition in the realm of literature and the arts. Yet one finds a virtual vacuum of research on this topic in educational literature.

One way of putting the purpose of the Conference is to suggest that we set some guidelines which may lead to promising ways of filling that "virtual vacuum" effectively.

The proposed objective of the Conference is to explore and assess the promise of a longitudinal study of expressive behavior in the arts. Conceivably, such a study would introduce a broad and deep investigation into a field that is virtually devoid of basic research. The stir of growing interest throughout the country in the arts desperately needs a base for its effective application in teaching and in curriculum building. The aim, then, is to develop approaches to basic study of expressive behavior in the arts which, eventually, will lead to fundamental knowledge useful for the teaching of the arts at all levels of education.

The procedure will be to introduce ten leading artist-teachers to ten leading, distinguished behavioral scientists who, together, will exchange views and determine possible headings. Under the chairmanship of the director of the project, the three-day conference will bring the two groups together for a mutual exchange aimed at the development of a major study. The artist-teachers will present short working papers,[1] outlining the present status of their knowledge of the growth and development of expressive ability in each field and accenting the gaps in knowledge about the artist-teacher. The behavioral scientists will respond similarly, perhaps accenting theoretical approaches and criteria problems.

At this point, hopefully, the conference would begin to take on a life and direction of its own which would lead to recommendations concerning preliminary steps toward a longitudinal study. We may get as far as suggesting approaches to experimental design or possibly recommending personnel to undertake the task of designing a major study. On the other hand, the course of the conference may run in any direction and, accordingly, the findings to the meeting will be determined as we go. In any case, it seems to me that we will produce suggestions which will spark an entry into the field.

Important in itself is the meeting of artist-teacher and behavioral scientist. As William B. Michael, Editor of the Review of Educational Research, has said, "To a great extent, the relatively little sophisticated research (in the fine arts) that is being accomplished is initiated by psychologists." Timely is the word for our get-together! I am enclosing a list of those who have been invited to the meeting.

Sincerely,

(signed) Jack Morrison

As chairman, my own role in the conference was somewhat similar to that of directing a play. I sought a good script, a good balanced cast, and an opportunity to work intensively, freely and creatively to illuminate the script. Instead of an opening night's performance, however, this report appears, and here the analogy fails. Rather than the performers, I am solely responsible for the discussion at the end of this report. Influenced by the writings of two of the participants, Frank Barron and Jerome Hausman,[2] I will not try to employ the implied objectivity of the third person. It would be false and pretentious. Having been a part of the proceedings, I will deliberately report in the first person. The reader, then, can rest assured my reaction to the conference is that of a university theater man with a professional educator's knowledge of behavioral science, with all the advantages and limitations that implies. Accordingly, I suggest you read the working papers before you consider my discussion. This should make your study of my comments more productive as well as more effectively critical.

The Obligatory Scene

After the screening of a film, "Hot-Dogger,"[3] a film exploiting the performance and prowess of a talented nine-year old boy on his skateboard and his subsequent efforts to transfer his performance to a surfboard, I submitted to the conference that this film was a non-verbal statement of creative behavior, that this boy was my idea of an artist who, with unassuming verve, had it in his "marrow bone"--as Yeats put it poetically. In my opinion the "obligatory scene" that artist and scientist were beginning to play out in our conference at Santa Ynez Inn has as its goal the understanding of the creative behavior this talented, motivated boy possessed and displayed.

Then, alternating scientist and artist-teacher, I introduced each member of the conference, and the papers were read.

Guilford, in his "Frames of Reference for Creative Behavior in the Arts," accents the classical requirement for a frame-of-reference for any research and then demonstrates his concept of a theoretical approach to study of creative behavior in his usual graceful and comprehensive way. Further, he demonstrates his methods of testing his theory of "the structure of the intellect" as it includes behavior of an artistic nature. Rice's paper "The Need for Identification," supports basic research but accents the current need for applied research which will focus on immediate ways of identifying the promising artist and thus serve problems of selection in the admission program.

In "Some Sociological Approaches to the Study of Creative Behavior in the Arts," Becker suggests that detailed sociological studies of artistic training institutions would be rewarding. He emphasizes the use of the sociological concepts of "career" and "student culture." Further he suggests comparative studies of training in the several art fields. A dancer, Dorothy Madden in "The Oldest of the Arts" is concerned with the nature of intuition and the sub-conscious. The seemingly conflicting demands for skill versus creative work and "rules" versus spontenaity demand research for subsequent understanding.

Michael, in "Possible Areas for Discussion in the UCLA Conference on Creative Behavior in the Arts," made his statement in a schematic series of stimulating questions. He is concerned with (1) the specific meaning of "creative behavior in the arts," and (2) "ways of conceptualizing and understanding creative endeavor in the arts." In a world of novelties piling on novelties, Christ-Janer with "A Fish for Judging," is deeply concerned with developing new forms to express these novelties, to see that subjective expressions of the gifted enrich all mankind.

Glick's "Reflections on the Study of the Development of Creativity" offers another theoretical frame-of-reference for investigating creative behavior in the arts based on the concept that man is an essentially creative being, a symbol-making organism. He is actively engaged in selecting and structuring his world. Creativity involves: a) ability to form new ideas and b) ability to work with them. Feigning enigmatism as a cultural anthropologist, Hoffman in "Thrasonical Rodomontade" differentiates between those who witness the play performed and those who perform it, and he strongly suggests the actor be studied as actor and how he--the actor as actor--grew.

Slobin in "The Child as Creator of His Language" gives evidence of the child's ability "to create an interior culture of his own" which suggests possible application to the development of artistic abilities. As a composer of music and teacher, Andrew Imbrie is interested in the combinations of forces, particularly aptitude and "vision" (a kind of penetrating creativity) which he finds in his interesting students. He would like to identify these forces earlier.

Yamamoto in his "Training for Creative Thinking: a Case of an Iceberg?" reviews current literature dealing with training for creativity, issues warnings of the incomplete findings in the field and offers a supporting bibliography. Graham, in discussing children's creative dramatics in his "Growth and Development of Expressive Ability in Theatre," accents the need for help from behavioral scientists in checking conclusions assumed by teachers of child drama. Further he points up the need for a base curricular articulation through the grades, and asks how we may develop research which will contribute to the training of specific areas within the theater: acting, directing, playwriting and scenic decor.

In "The Sociology of the Arts: A Negative Manifesto" Horton, arguing that creativity is a social process involving the interaction of artist and society, calls for research on the relationship of the artist to his audience as well as on the artist in every socially relevant context. Mendelowitz describes his own quest as an artist in "My Personal Experience in Art."

Flanagan's "Preliminary Efforts to Identify Creativity" reports findings from his research in "Project Talent" and indicates that his use of testing for creativity is likely to be confirmed by follow-up studies. In "Problems of Theory Construction in Art Education," Hausman focuses on the challenge of building theoretical constructs from sustained observations of artists. He is convinced that theory building must proceed from a point-of-view about the nature of art as well as how artists seek to give form to and realize meaning through these images.

In my chapter "Discussion of the Conference," I have drawn together the points of the discussion which were meaningful to me in a format based on the announced objectives of the Conference. In this sense, my chapter doesn't reflect the true course of the discussion at all. Rather the discussion moved like a swarm of bees. The group swarmed around the topics together, appearing to seek a place to light but refusing to settle on any topic for long. This group would swarm wildly off in quest of one topic or return, for a while, to a previous one. Caprice, however, did not characterize the movement of the discussion. Search was the basic characteristic. Accordingly I have tried to pick up the main leads of our search and describe them for the reader in a way that may be useful for him.

At the present time there is no way of assessing what changes may occur in the professional lives of the conferees after this encounter of scientist and artist-teacher. I believe there may be some--and of importance. One of the younger scientists volunteered that the conference may have changed the course of his career in research towards new approaches to the nature of creativity. If the "pleasure-pain principle" has anything to do with it, the stimulating, pleasurable, excitement of our dialogue unquestionably reinforced the likelihood of pursuing research on expressive behavior in the arts in the immediate future.

Acknowledgements are due to Dr. Robert Haas and his Arts and Humanities staff at UCLA Extension and Miss Nan Hardy who, on short notice, served as secretary to the conference.[4] I am also indebted to my wife, Jeanne Cagney Morrison, for hostessing the "Chairman's Hour," and Mr. Richard Grove, representing the Arts and Humanities Branch of the U.S. Office of Education, was consistently helpful and supportive for the duration of the project.

Footnotes

1. By arrangement with the Chairman, Mihalyi Csikezentmihalyi, Mantle Hood and Kenneth Rexroth did not present papers.

2. I refer to Hausman's chapter, "Research on Teaching the Visual Arts" in Nathan L. Gage's Handbook of Research on Teaching, Rand McNally, Chicago, 1963 and Frank Barron's Creativity and Psychological Health, Van Nostrand, Princeton, New Jersey, 1963.

3. "Hot-Dogger," made in the Fall of 1964, is a 16 mm film from the UCLA Theater Arts Department's "Beginner's Workshop" in the Motion Picture Division.

4. From the experience of chairing this particular conference, I must submit that effective techniques of recording a conference in a way readily useful to editing the proceedings are still around the corner. Tapes, stenotype, multi-track recording devices are all very well--and helpful--but they are curiously flat and unresponsive to the dynamic exchange and significant moments among sophisticated people. I am presently convinced that the essential ingredient may be an experienced editor who would work with the chairman from the onset of the planning period to the final draft of the report. I'm afraid this is neither the first nor the last conference to suffer from such an omission.

I

FRAMES OF REFERENCE FOR CREATIVE BEHAVIOR IN THE ARTS[1]

J. P. Guilford
University of Southern California

If my interpretation of this situation is correct, we have gathered here a group of individuals representing the various arts, who desire to further their understanding of what it means to be creative and to give thought to procedures for investigating creative performance in the arts. The title chosen for this conference, "Creative Behavior in the Arts," by its appropriate emphasis on "behavior," implies that many of the problems encountered in the pursuit of these objectives lie in the realm of psychology. We have also in the gathering a group of psychologists, and there is rather obvious expectation on the part of organizers of the conference that there shall be fruitful intercommunication, cross fertilization of ideas, and, hopefully, some hybrid offspring with superior qualities.

As a psychologist who has devoted quite a number of years to investigations pertaining more or less directly to the potential understanding of creative behavior in general, I shall offer some suggestions that I hope will be helpful. I have chosen to emphasize frames of reference that I have found very useful in connection with the investigation of creative thinking and creative production. I shall speak first of the needs for frames of reference and how they facilitate progress models that I have found exceedingly useful and meaningful and show how they are readily adaptable to investigations of creative behavior in the arts.

Needs for Frames of Reference

Whether or not anyone here decides to adopt the frames of reference that I shall describe, I should like to emphasize that any serious investigator, in basic science or in technology, will find a good frame of reference very helpful. A frame of reference may be as broad as a philosophical point of view or as circumscribed as a limited scientific theory. The kind that is close to a scientific theory is most useful to the investigator of some particular domain such as creative behavior. The advantages are the same as those of a scientific theory. Why do we need scientific theory?

Without scientific theory, the investigator has no major goals or directions; it is a case of the proverbial "ship without a rudder." It is not enough just to have a strong desire "to do research." Undirected effort is often futile. Such an investigator is likely to pick away at minor problems, here and there, as fancy of the moment dictates or as opportunity comes his way. Only more or less by chance is he likely to work on significant problems and to make a lucky strike, if he ever does.

A scientific theory is a source of significant problems, each problem a question, to which an answer is sought. Progress depends very much on being able to ask questions and to ask the right questions and the significant questions. Theory generates questions and also provides a basis for determining whether questions, however generated, are significant ones. Obtaining answers to questions by way of empirical testing, known as research, should be expected either to support the theory or not to support it. In the latter case, a change in theory may be called for. The need to change a theory is no disgrace. In research, one cannot afford to be afraid of making mistakes. Such fears put a damper on creative production. Correction of mistakes at least holds the prospect for real progress. Finding out what it not true is often as informing as finding what is true. And, very often, two alternative, positive, hypotheses can be tested, in which case either outcome is a positive gain.

Requirements for a Good Frame of Reference

A good frame of reference for an investigator's purposes has three important specifications; it should be comprehensive, it should be systematic, and it should be basic.

When I say that a frame of reference should be comprehensive, I do not mean that it should be of the broad, philosophical type. It should be sufficiently restricted to generate questions that can be answered by empirical tests by empirical procedures. But it should not be so circumscribed that one loses sight of the larger picture, for all phenomena have significant ramifications. Understanding one item in a complex of items depends on part upon knowing interrelationships. Keeping a broader view is needed to ensure that some item, perhaps an important one, if not a crucial one, may not be overlooked.

Some investigators, in their legitimate efforts to simplify things, in their dutiful application of the principle of parsimony, are likely to eliminate from possible view some of the phenomena that should come within the scope of their observations. Too many psychologists, at least, have overdone the urge to simplify, with the result that significant phenomena have been excluded from consideration. I urge you not to make the same mistake.

A good frame of reference is systematic. The only hope of human understanding of natural phenomena is the fact that there are regularities in nature. Such regularities are what we are seeking within the sphere of our investigations They offer the possibilities of principles and scientific laws. Principles and laws provide a shorthand type of apprehending information, enlarging the scope of our understanding and our powers to operate with phenomena. In the pursuit of further simplification and at the same time larger grasps of information, model building becomes possible. Model building is theory construction.

It appears to be in the nature of human thinking to resort to one or more of a few standard types of models, which can be quickly pointed out. In the psychological development of children, Inhelder and Piaget (1964) point out that there is growth in conceptions of what they call "seriation." By seriation they mean the arrangement of items of information in linear order, each item related to the next in line in the same manner, e.g., larger than, harder than, or more beautiful than. In the adult, particularly the educated adult, thinking in terms of abstract dimensions becomes more or less natural. Thus, we have dimensional models, which are most widely applied in mathematics and in the physical sciences.

Inhelder and Piaget (1964) also point to a parallel development in the recognition of classes and of classes within classes, in other words, hierarchical systems or models. Such models have been relatively more common in the biological sciences, in the classification schemes of Linnaeus. They are not unknown in psychology and in psychiatry.

A third type of model, not nearly so well known, has been called "morphological" by the astronomer Zwicky (1957). Basically, this type of model is a cross classification of phenomena, in intersecting categories. The chemist's periodic table introduced by Mendeleev is a good example, in which the chemical elements are arranged in rows and columns, each row and each column representing a different category. It could also be referred to as a "logical matrix." An ordinary matrix, as in mathematics, has two dimensions. There is no reason for not extending the model to three or more dimensions, if necessary. I have advocated the use of the morphological type of model in psychology and later I shall give an example of a three-dimensional one.

A fourth type of model owes its origin most largely to the communication engineers and to the fields of cybernetics and computer technology. It is well-named as an "operational" type of model, for it conceives of events in terms of an interconnected series of transmissions of information. In the course of time, there have been some steps in this direction made by psychologists in attempting to account for sequences of events in behavior. But for the most part, the operational model utilized by psychologists has been an over-simplified one constituted of stimulus and response. Taking their cues from computer technology and the efforts to simulate human thinking and problem-solving by means of computers, some psychologists are now proposing more complex and more descriptive operational models. I shall present an example of this kind of model.

When I say that a model should be basic, I am thinking in terms of basic science. Many of the problems with which our teachers are concerned are educational in nature and therefore technological rather than scientific in the basic sense. But the models of basic psychology should be relevant in educational investigations, just as chemical models are relevant in the studies of pharmacology or of petroleum engineering. There is no particular harm in developing models that may appear to represent phenomena more directly or more completely in a technological setting, but basic scientific models should carry the technological investigator a long way and serve certain of his purposes very well. In the present context, what I am suggesting is that the investigator into the realm of creativity in art could find certain psychological models quite useful; including its concepts and its principles.

Two Psychological Frames of Reference

I shall present for your consideration two psychological models, one in the operational category and the other morphological. They are not at all in the form of alternative models between which a choice has to be made. Being different in type, both can be applied and they are quite consistent with one another, in fact quite supplementary. They merely serve somewhat different purposes, they imply different kinds of problems and approaches, but share many of the same concepts and principles.

The model to be mentioned first is an operational one. The reason for mentioning it first is that it comes closer to a general description of psychological events with which all of you have had personal acquaintance. For the same reason, there has been some historical precedent. The model in question attempts to depict in very general form the events in problem-solving. I might have said "events in creative problem-solving," but that would be somewhat redundant. After a number of years of considering the relation of creative thinking to problem-solving, I have come to the conclusion that wherever there is a genuine problem there is some novel behavior on the part of the problem-solver, hence there is some degree of creativity. Thus, I am saying that all genuine problem-solving is creative; I leave the question open as to whether all creative thinking is problem-solving; it may be. At any rate, the relationship is so close that a problem-solving model is very relevant here.

The other model is more abstract but it is more basic and of greater consequence. It is of the morphological type. It arose out of some 20 years of efforts to analyze intelligence into its component abilities and is known as the "structure of intellect." Concepts arising out of the second model have been very serviceable in filling out the first, as we shall see.

The Problem-Solving Model

Three progenitors of the problem-solving model will be mentioned. One was designed to describe a quite general sequence of events in problem-solving; one to present an outline of the steps in creative production; and one more specifically for the steps in an ordinary invention, such as comes to the attention of the patent office. John Dewey (1910) offered the first attempt of such a model, when he pointed out the following steps in typical problem-solving (see Fig. 1): awareness that a problem or a difficulty exists; analysis of the problem, leading to understanding of its nature; suggestion of possible solutions; and testing the alternative solutions by a process of judgment and accepting or rejecting solutions.

Graham Wallas (1926) suggested four similar steps: preparation, which involves collecting information that may be needed; incubation, which means a temporary pause or relaxation of effort; inspiration, or the moment of insight or flash of genius; and evaluation, with elaboration of the created product.

Rossman (1931) considered what the typical inventor goes through in the total process of arriving at a new invention and concluded that there are seven steps: a need or difficulty is observed; the problem is formulated; available information is surveyed; solutions are formulated; solutions are critically examined; new ideas are formulated; and the new ideas are tested.

Similarities among these three operational models, evidently developed independently, should be obvious, supporting the earlier assertion of the strong connection between problem-solving and creative production, if, indeed, they are not one and the same. I should say that the major difference is the mention of incubation in the Wallas model. I consider this a logical error, for incubation is a state or condition rather than a psychological operation. This is not to deny the role of incubation, or to degrade it, but to place it in proper perspective.

The model for problem-solving presented in Fig. 2 was developed, taking into account the traditional models but also the structure-of-intellect theory and some of the more recent findings of neurology, experimental psychology, and communication theory. It is consequently somewhat elaborate, yet embodying simple principles. We are not concerned with all the detailed features of the model here. Those features most pertinent to our present needs will be explained.

In common with earlier models, the upper row of rectangles indicates a temporal sequence of events moving from left to right, with the sensing and understanding of the problem (congnition) being followed by generated solutions (production). The main difference is the addition of a repeated cycle of cognition and production, as suggested by the Rossman model. Such cycles could go on and on, of course, but one repeated cycle is sufficient to demonstrate the principle of repeated attempts at understanding and solution generation. Missing from the direct sequence is the step of evaluation, which is put to one side (below the main stream), and which is repeated at every stage to indicate that there is continual self-checking of behavior. Although evaluation may play its heaviest role after production, it can undoubtedly influence other operations at any time.

A novel addition is the memory-storage panel, placed at the bottom of the scheme to indicate that what happens at any moment along the course of problem-solving can be and probably is influenced by what the thinker has in his memory storage. Most of the generated information in connection with production, also in connection with cognition and evaluation, comes from that source. New information that the thinker solicits and absorbs from his environment has at least a little time in memory storage before it is utilized. I shall ask you to put into your memory storage for use a bit later the fact that there are four major kinds of operation involved in the model--cognition, memory, production, and evaluation.[2]

The second important feature of the model that should engage our attention is the fact that there are four distinct kinds of information represented in memory storage, for this has far-reaching consequences. The four kinds of illustrated information are segregated for easy classification. First, at the extreme left we see some visual forms, having different visual properties of shape, size, and so on. Such information is concrete, much as we perceive it through the visual channel.

Next, to the right of the visual-figural information is a set of information called "symbolic," for the reason that when the individual processes information arising from stimuli such as letters, numbers, and musical notations, it is not the visual-figural properties with which he deals, but rather something for which those signs stand, as he has learned in his culture. The term "symbolic" here should not be extended too far. It does not include such things as Freudian symbols or national flags and the like. I shall give a different account of such symbolism later.

The third kind of information is touched off in our nervous systems by familiar objects or printed or spoken words that are meaningful to us. A printed word has a shape, which is a figural property; it is a certain sequential combination of letters, which is a symbolic unit; and it carries to the person who can read the word the communication of an idea, which is semantic. These three kinds of information are often distinguished by those who write about language and by others.

The fourth kind of information, behavioral, is used by everybody every day but without the realization that it represents a distinct kind of information. It is information involved in the understanding of one person by another, often without the medium of verbal communication. The cues are in the form of facial expressions, bodily postures, tone of voice, and bodily movements. We implicitly recognize this kind of information when we say "Actions speak louder than words," or "It is not so much what you say as how you say it."

Information and Fields of Work.--The four kinds of information were forced upon our attention in the Aptitudes Research Project at the University of Southern California, by findings concerning intellectual abilities. It has been demonstrated repeatedly that it takes quite different abilities to deal with or to process the four different kinds of information, even when performing the same operation--cognition, memory, production, or evaluation. There are parallel sets of abilities for dealing with the different kinds of information. But more of that later; here it is desirable to point out some of the consequences of all this for different kinds of work in everyday life, and more particularly in the various arts.

Figural information is the psychological meat of those whose occupation calls upon its members to deal with concrete problems. Of the non-artist groups, the mechanic, the athlete, the aircraft pilot (especially of small aircraft), and the inventor of gadgets come first to mind. Artists of various kinds are very much concerned with figural information of one kind or another. At this point we must bring in a new distinction, for concrete information can be of auditory or of kinesthetic origin as well as visual. The field of visual-figural abilities has been rather extensively explored, with almost no investigation of abilities in the auditory or the kinesthetic modes of information.

Obviously, among artists dependent upon visual-figural information are painters, sketchers, sculptors, designers, and all their variations. Artists dependent upon auditory-figural information are musical composers, arrangers, and musical performers. The poet should be mentioned, to the extent that rhymes and rhythms have auditory properties. Kinesthetic information is of significance for the choreographer and the dance performer, although visual information also plays a role for these groups.

Symbolic information is the meat of the mathematician, the modern logician, the cryptographer, the linguist, and the chemist. With symbolic information defined in the limited way that it is in connection with the problem-solving model, there is little to offer in the way of applications in fields of art.

Semantic information being so much connected with words, and words with communication, occupations that deal very much with verbal communication are heavier processors of semantic information--scientists, writers, speakers, lawyers, and teachers, for example. Among artists whose mode of expression is verbal are writers of various kinds of output--fiction, non-fiction, poetry, plays, librettos, and lyrics.

Behavioral information is of relatively great importance to people who deal directly with other people, who must understand them and possibly attempt to control them. Among such occupations we can list politicians, statesmen, salesmen, policemen, teachers, social workers, and psychiatrists. Among the artists who deal heavily with behavioral information are writers of psychological novels and dramas; directors of drama, and actors; cartoonists and portrait painters; and sculptors (such as Michaelangelo or Rodin).

I do not wish to leave the impression that any one artist or type of artist deals in only one kind of information. Many artists often process more than one kind of information in the pursuit of their creative productions. The painter or the composer or the sculptor or the choreographer may first conceive of his theme in semantic form, then proceed to translate it into figural form. Only the modern type of painter may entirely lack semantic information in his product.

The four kinds of information are like four different languages and there is the possibility of making translations from one to another. There are limitations to translating, however, for "vocabularies" are not complete and fully parallel in all four of the languages. Each artist may find it much easier to think in terms of one of the languages and may know another language so poorly that he cannot succeed in making the translation. Problems of translation must surely come into the sphere of investigation in the psychology of the arts.

The Structure-of-Intellect Model

Fig. 3 presents a view of the structure-of-intellect model, a three dimensional matrix or morphological model; a cross-classification of human intellectual abilities, known and yet to be demonstrated. Each cell represents a unique kind of ability or intellectual skill, of which 120 are hypothesized by the theory and 70 have been demonstrated. The model has since served as the very useful source of suggestions as to where to look for new kinds of abilities and further explorations are in progress. I mention this in support of an earlier statement about the advantages of having a productive theory or frame of reference.

In this model you will recognize the four kinds of information or content already discussed, also the four kinds of operations mentioned in connection with the problem-solving model. But here are represented five kinds of operations. The reason is that a distinction has to be made between two kinds of production abilities--divergent production and convergent production. Both have to do with the retrieval of information from memory storage, but convergent production occurs under severe restrictions. Starting with the given information, there is only one right or conventionally acceptable answer. The best examples of this kind of production are found in mathematics and logic. In divergent production, a variety of solutions or ideas is possible, under the freedom offered by the problem and the relaxed judgment of the thinker. The arts are notorious for such latitudes and they thus offer opportunities and challenges to the divergent thinker.

The entirely new concept in the structure-of-intellect model, not explicitly demonstrated in the problem-solving model (but actually illustrated there), is that of products. Psychological products are the special forms in which information is processed; as units, relations, classes, systems, transformations, and implications. Each and every separate item shown in memory storage in Fig. 3, or, rather, the information that it stands for or implies, can be taken as a unit. A figural unit may be a letter, a geometric form, or the outline of a familiar object. A symbolic unit may be a familiar syllable or word, a bar of music, or a code letter or word. Concepts are semantic units; so are what are popularly called "ideas." Behavioral units are states of mind--perceptions, feelings, intentions, and the like. Examples of systems are the two theoretical models of which I have been speaking, although there are many simpler instances, such as the more complex items of information in Fig. 2, when we analyze them to find the interrelationships among their parts. Examples of other kinds of products will come out in subsequent discussion.

Divergent-Production Abilities--Let us concentrate a while on the abilities in the divergent-production operation category, for it is believed that they play important roles in creative thinking. It should be kept in mind that the operation of production is a matter of generating items of information by retrieval or recall of those items from memory storage. The chances are that, to solve a new problem, those items of information must be recalled in new connections or in revised form, and this is where novelty comes in.

Before the divergent-production category of abilities was recognized, a number of abilities were found and described under the headings of fluency, flexibility, and elaboration. One test of fluency asks the examinee to produce items of information in response to given information as rapidly as he can. For example, in the verbal or semantic category, we ask him to list as many things as he can that are white, soft, and edible. For a parallel figural ability, we ask him to sketch simple objects or designs, each containing a circle or some other prescribed element. In these tests, units of information are being produced.

In another verbal-fluency test we ask the examinee to produce a list of four-word sentences. In such a task, the generation of a sentence means the organizing or production of a semantic system. In a parallel figural test, we give the examinee a set of elemental figures, such as a circle, a rectangle, a triangle, and a trapezoid, which he is to combine in various ways to produce more complex objects, in other words, figural systems.

In one verbal test for flexibility, we mention a very familiar object such as a newspaper, asking the examinee to suggest several unusual uses to which it can be adapted, all different. In a parallel figural test, we present a small set of figures that differ in several respects, each with some degree of complexity, asking him to form as many classes as he can, of three figures each. Similarities in terms of different attributes permit the regrouping of the figures in different ways. At first glance these two tests do not appear to be parallel, but psychologically they are; they both require the examinee to go from one class to another. Each unusual use of a newspaper (such as "to swat flies," "to light a fire," or "to wrap garbage") reclassifies it according to some particular property just as regrouping figures does in the other test.

The product involved is that of class and the flexibility is shown in readily going from one class to another. You may have heard that one of the common diseases of the uncreative person is a "hardening of the categories."

For another kind of flexibility in the semantic context, we give a test called Plot Titles. Giving the examinee a very short story plot, we ask him to suggest alternative, appropriate titles. We may or may not instruct him to make the titles clever; some of them will be clever and some not. The number of clever answers is the score. Clever titles involve a playful shifting of views of the facts of the given story, in other words, revisions or transformations, which show up in titles in the form of puns, alliterations, and other literary tricks.

In the figural category of information, we give a Match Problems Test. This is based upon the familiar game that starts with a layout of adjacent squares or triangles, each side of which is a movable match. The examinee is told to remove a specified number of matches to leave a specified number of squares or triangles and to solve each problem in as many different ways as he can. Here, again the examinee must be flexible. He must be able to take new looks at his problem and to strike off in new directions. The "new look" means a revision or a transformation. Being ready to transform given information and to revise our strategies accordingly is an important contribution to creative thinking. Transformations enable us to use information that is retrieved from memory storage in new ways, thus contributing to creative resourcefulness.

Ability to elaborate upon information has long been recognized as an important contributor to artistic production. The artist typically generates schema or systems first, to which he gives flesh and blood later. There are always finishing touches needed to round our the final product. We get at the elaboration ability in the semantic area in a test that calls for elaboration of a plan, for which only an outline of major steps is given. The number of detailed steps given in limited time is the score. In the structure-of-intellect theory, elaboration has been recognized as a matter of producing implications. That is, the details given to round out a scheme are implied by the scheme itself, and one added detail may lead to another. Where one item of information leads naturally to another, we have an implication. A more recently developed test of semantic elaboration is called Possible Jobs. Given is a relatively simple but realistic picture, such as a setting sun to which the examinee is to respond by listing occupations or groups of people for which the design may serve as a symbol. This test serves to measure the same ability as the Planning Elaboration test.

In the figural context, we offer simple lines or outlines of objects, asking the examinee to add lines of his own, as in our test called Decorations. Outlines of pieces of furniture and of clothing are presented and the number of appropriate additions is the score, where "appropriate" is given a very liberal interpretation. The same outline objects are presented twice, so there is added room for divergent production. As in the verbal tests, the lines are added by implication from what is given.

No examples were given for tests of divergent production involving symbolic information for the reason that this category of information is of little or no relevance for art. Remember that I ruled out of the symbolic category the kinds of symbolism that are so common in art. I now suggest that such symbolism really belongs under the heading of the product category of implications. The Possible Jobs test is an example. As in this test, symbolism in art often crosses the boundaries of information categories, hence involves the translation problem.

Nor were examples given for divergent production of behavioral information. At this point in time we are still in the hypothesis stage, for although the structure-of-intellect model predicts such abilities, we have only recently started research designed to test the hypothesized abilities. As a matter of fact, we have only recently demonstrated that there are any abilities for dealing with behavioral information at all. But a study testing the hypothesis that there are six abilities for cognition of behavioral information has just recently been successfully completed, giving strong faith in the expectation of other behavioral abilities, including those hypothesized for divergent production.

A word should be added regarding evaluation abilities, in view of the importance given to that concept in creative thinking and problem-solving. I must confess that, although we have demonstrated a dozen evaluation factors, the rather limited kinds of tests that demonstrate those abilities suggest that only logical criteria are involved, for example, criteria such as identity and logical consistency. I am sure that the criteria of what is good and satisfying in art go well beyond those criteria. Psychologists have shied away from questions of value, but such problems must be faced, for, involving human behavior as they do, they should be challenges to the investigating psychologist as well as to investigating artists.[3]

Summary

This paper has stressed the importance of having a frame of reference or theory as a source of significant problems in the conduct of research. It has suggested two psychological models that should serve the investigator in the area of creative artistic behavior; a model for the operations involved in problem-solving, in which creative components are characteristic, and a model for the whole range of intellectual abilities, among which are many that are apparently relevant for success in creative artistic production. The concepts and principles offered by these models should be quite adaptable and serviceable in pursuing further understanding of the creative artist and his behavior.

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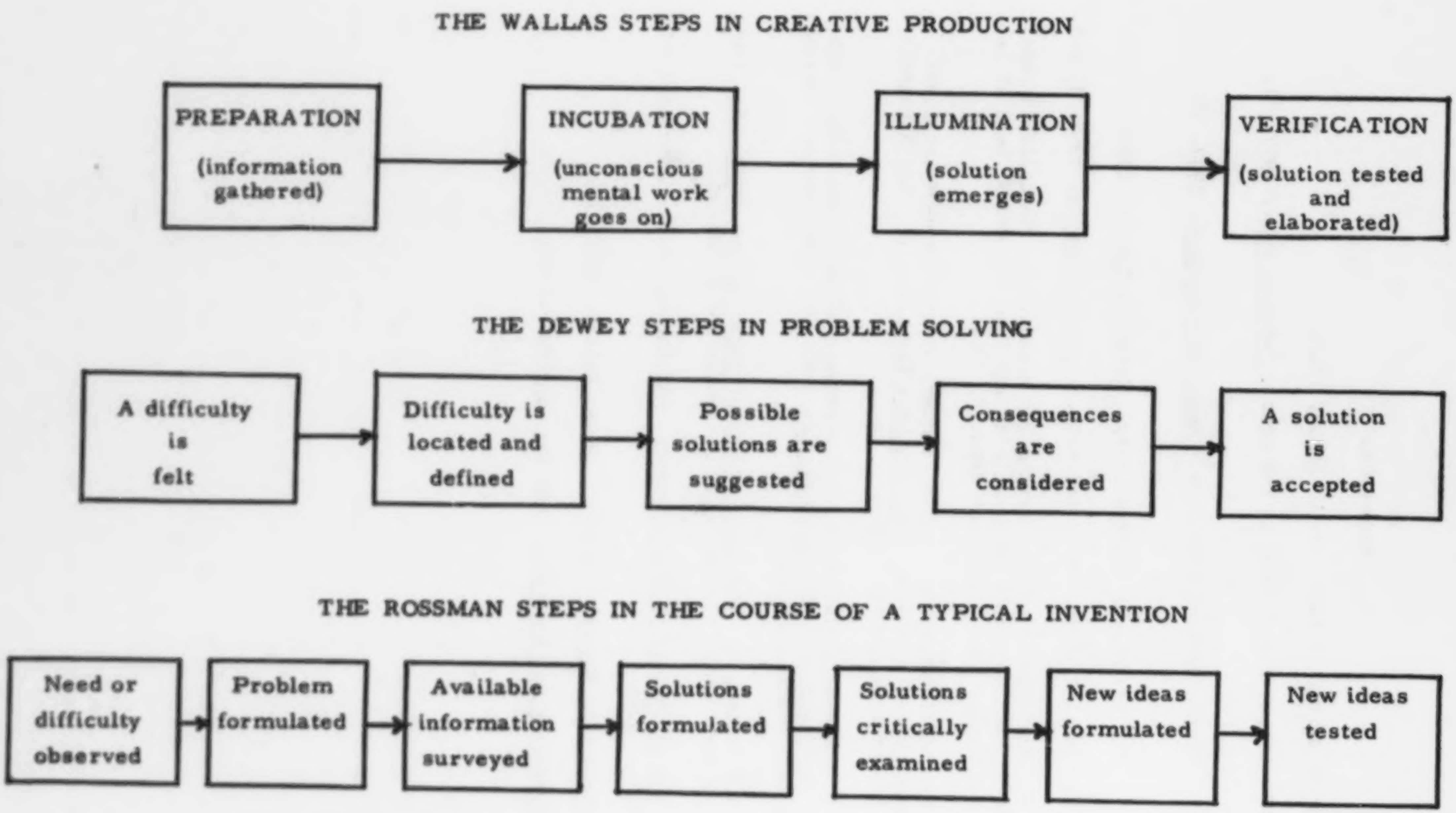


THE WALLAS STEPS IN CREATIVE PRODUCTION

PREPARATION (information gathered)
INCUBATION (unconscious mental work goes on)
ILLUMINATION (solution emerges)
VERIFICATION (solution tested and elaborated)

THE DEWEY STEPS IN PROBLEM SOLVING

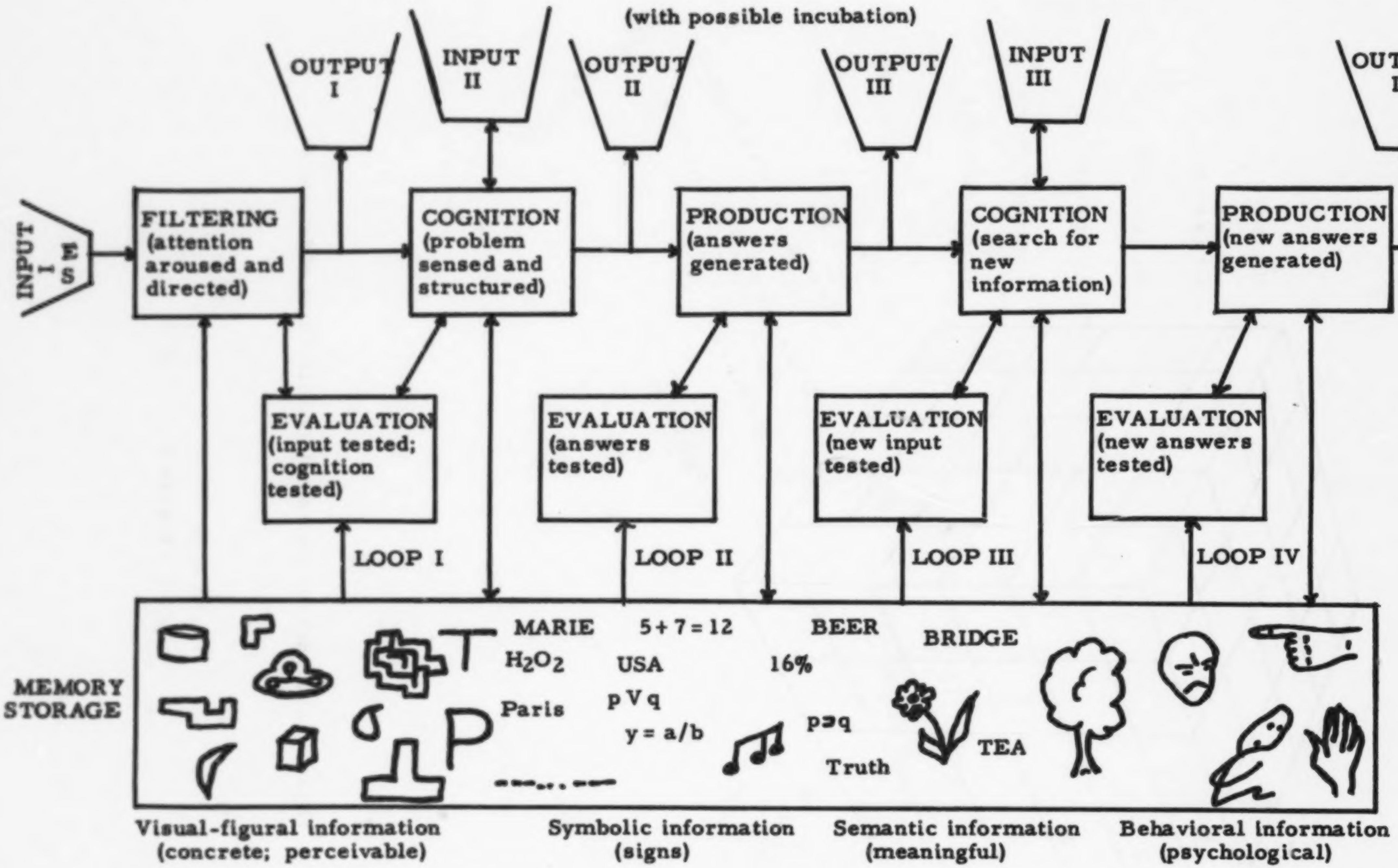
A difficulty is felt
Difficulty is located and defined
Possible solutions are suggested
Consequences are considered
A solution is accepted

THE ROSSMAN STEPS IN THE COURSE OF A TYPICAL INVENTION

Need or difficulty observed
Problem formulated
Available information surveyed
Solutions formulated
Solutions critically examined
New ideas formulated
New ideas tested

Three traditional conceptions of the sequence of events in creative production, problem solving, and invention.

Figure 1


(with possible incubation)
OUTPUT I
INPUT II
OUTPUT II
OUTPUT III
INPUT III
OUTPUT IV
INPUT I E S
FILTERING (attention aroused and directed)
COGNITION (problem sensed and structured)
PRODUCTION (answers generated)
COGNITION (search for new information)
PRODUCTION (new answers generated)
EVALUATION (input tested; cognition tested)
EVALUATION (answers tested)
EVALUATION (new input tested)
EVALUATION (new answers tested)
LOOP I
LOOP II
LOOP III
LOOP IV
MEMORY STORAGE
MARIE
H2O2
Paris
5+7=12
USA
p V q
y = a/b
BEER
16%
p⊃q
Truth
BRIDGE
TEA
Visual-figural information (concrete; perceivable)
Symbolic information (signs)
Semantic information (meaningful)
Behavioral information (psychological)

Schematic diagram of the flow of information in a somewhat typical instance of problem solving, from input (from environment and from soma) to the output of accepted information.

Figure 2
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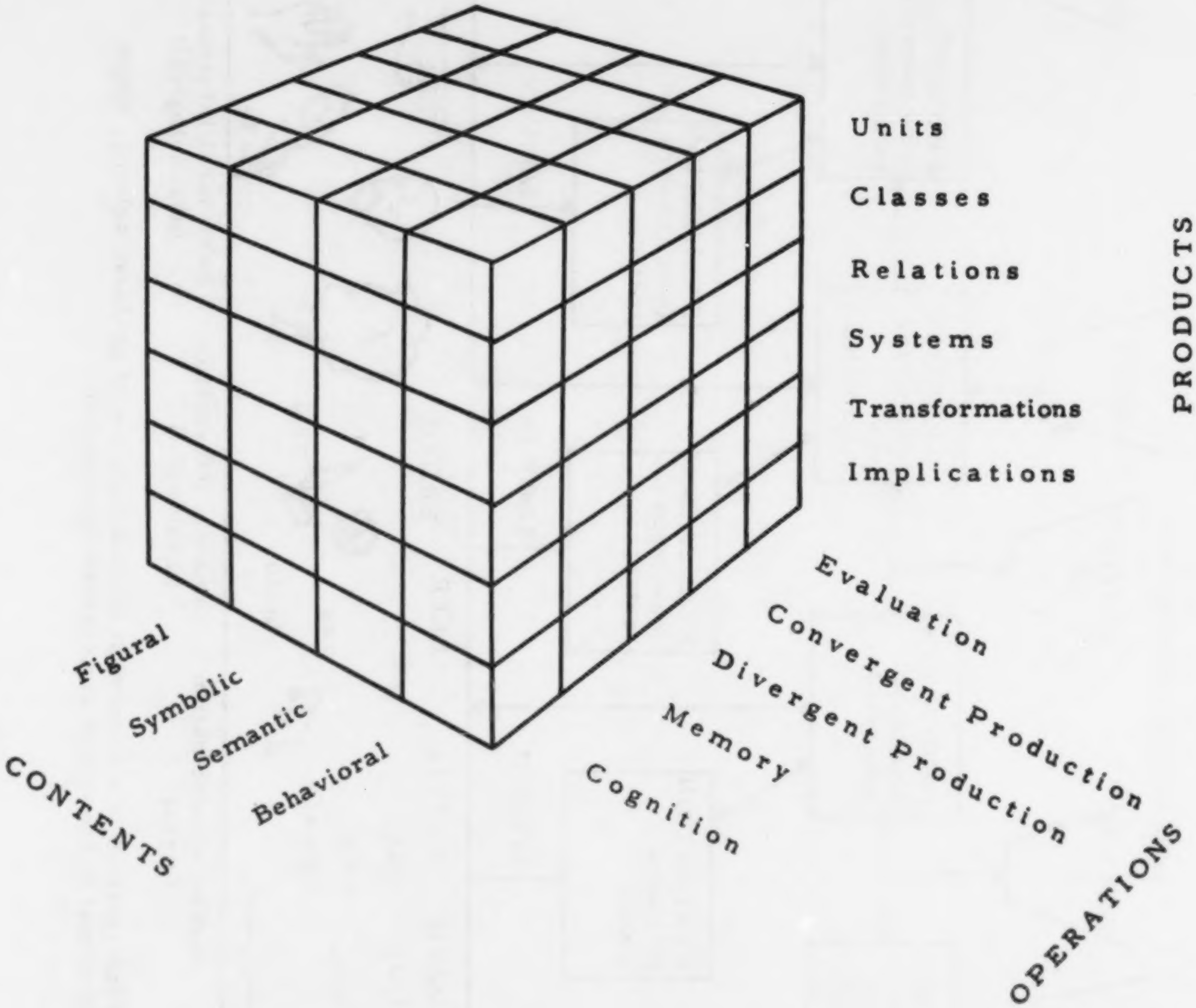
Units
Classes
Relations
Systems
Transformations
Implications
PRODUCTS
Evaluation
Convergent Production
Divergent Production
Memory
Cognition
OPERATIONS
Figural
Symbolic
Semantic
Behavioral
CONTENTS

Theoretical model for the complete "Structure of Intellect"

Figure 3

Footnotes

1. A paper presented to the conference on "Creative Behavior in the Arts," sponsored by the University of California at Los Angeles, Feb. 18-20, 1965.

2. Further details concerning the operations represented in this model may be found in a paper "Basic problems in teaching for creativity," presented at the Conference on Creativity and Teaching Media held at La Jolla, California, Aug. 31 through Sept. 3, 1964.

3. Further information concerning the structure of intellect may be found elsewhere (Guilford, 1959; Guilford and Merrifield, 1960; Guilford and Hoepfner, 1963). For further thoughts on the psychology of creativity in the arts, see other sources (Guilford, 1957, 1960, 1962).

II

THE NEED FOR IDENTIFICATION

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Studies of the creative process ranging from the evaluation of intuitive judgments to the identification of creative patterns through computer research, have been going forward with increasing intensity for many years. Other studies in supportive areas of psychological and physiological research have dealt with problems of visual and oral response, on measures of aptitudes in the various arts and perception.

From the standpoint of scholarship, I am hardly qualified to make any assesment of the value of these researches. They are recorded in forms which are not readily accessible to those who are not specialists, and they can be evaluated only by those who have enough information to make valid comparative judgments. To persons in the arts, certain characteristics appear to color the findings of social scientists when they deal with the creative nature of artists. First, they (the scientists) find a more congenial base in words than in other symbols used by creative people. Thus the values of sound, visual response, gesture, movement and that less easily categorized imagery which evolves from new combinations of artist's means, are not brought into fruitful synthesis with scientific controls, nor are they adequately used to enhance scientific judgments. If studies of creative behavior are to have more than academic interest, they must ultimately be transposed from the removed atmosphere of dispassionate investigation into more accessible levels of operational procedure. In such studies, artists (in the broad meaning of the term) as well as social scientists may be able to suggest useful exploratory methods.

A longitudinal study, if this implies work at both ends of a continuum--childhood to mature artist--with conclusions which will support a center of intelligent reappraisal of our educative processes in the arts, could be of significant value. Without discounting, in any way, the important work now going forward toward better understanding of the nature of creativity, the effect of social conditions on artistic activity, the place of the arts in our dynamic society, or the techniques of learning as they can be applied to ends which produce artists, there is, among schools teaching the arts, a compelling need to assimilate what has already been accomplished. We need to develop a vocabulary through which ideas of value will have as much meaning for those who must encourage the creative process as for those who hope to define it. The problem of the schools is one of identification, evaluation, selection and enhancement. Measures which once appeared to be adequate must now be appraised as having only partial value. Such partial means become wasteful in a society which cannot afford the luxury of too many errors in its direction of talent to productive ends.

Artists are not a product of talent isolated from all other qualities. Personal commitment, social needs, the values assigned to their activities by responsible critics, intelligent educational guidance--all combine with aptitude to make artists. Studies of the environments in which artists have most productively moved may be essential. We may be in the end less concerned with achieving a synthetic atmosphere in which the arts can flourish than with dispelling from our society some of the adverse qualities which tend to extol non-art products or anti-art expression. Artists are far from being nonentities or neutral social forces. Social criticism, product design, structures, entertainment, education, urban development and many more aspects of man's activities have elements which are rooted in the arts. Social achievement of significant proportions will inevitably depend to some degree on the extent to which artists are given responsibility for the functions they can best perform, including even the exercise of their critical or experimental attitudes toward the society which contains them. The solutions which art supplies are not always verbally mensurable. The artist must attack his problem in his own terms, in his selected medium. The cross reference of one art to another is a form of simile, but this is useless except to illustrate parallels. It is never possible to make exact translation from one art to another. The flaw in many art judgment measures has often been the assumption that art deals with approximation rather than precision of response. A trivial or irrelevant choice will encourage in artists the urge to reject totally. Thus many tests tend to eliminate in advance those best qualified to respond at mature levels, or with the artist's complexity of insight.

Generally speaking, aptitude testing has been the limit of effort in the functional application of psychology to the arts. The techniques used do not appear to discriminate sufficiently in those areas of imagination through which creativity makes itself most directly manifest. Thus aptitude, a directional term rather than a qualitative one, may be the only useful measure through which students, schools and programs are presently related.

Studies of creative behavior might add dimensions, then, to the processes of identification of artists, to the generation of intelligent means in their education, to the development of understanding in the society which contains them, and in better use of the final product, which is art. If artistic insight and evaluation can be added to scientific method and interpretation, the result will have value.

III

SOME SOCIOLOGICAL APPROACHES TO THE STUDY OF CREATIVE BEHAVIOR IN THE ARTS

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I take it that the role of a sociologist in a conference like this is to say something about the role of social groups and experience in them in the formation and maintenance of creative behavior. Which is to say that I will avoid the problem of what creative behavior is. I will instead assume that artists can agree on what they would like to think of as creative artistic behavior and that psychologists and others have developed ways of identifying in practice what the artists have agreed on in the abstract.

If we could arrive at such a definition and such a way of identifying what is defined in the real world, clearly a difficult enterprise, then a sociologist might be able to provide some leads as to the conditions under which creative behavior occurs and, in particular, something about the conditions under which training in the arts either helps promote or obstructs the development of creativity. The sociologist could do this by using the theoretical apparatus developed in the study of other occupations and other kinds of behavior. When I speak of theoretical apparatus, I do not have anything very formidable in mind; rather, I am thinking simply of the ideas that sociologists have used to make sense out of what they have observed in other areas of society.

If we start out with the very simple idea that creativity in the arts, whatever that may be, depends in some measure on the social situation of the artist, we can begin to find our way into the problem. The social situation of the artist is the set of relationships he has with all the other people he becomes involved with in the course of practicing his art. In each of these relationships, he must abide by whatever rules have grown up to govern behavior in that relationship. He must take account of the power of the other parties in these relationships to enforce their will upon them. He must take account, in his artistic behavior, of what possibilities of behavior these relationships open up to him and what possibilities they close off. For instance, one set of rules governs the relationship of an artist and his patron. Quite another set of rules governs the relationship of an artist practicing his craft for the benefit of a mass audience. In the one case, the artist is dependent on one person and very much subject to the whim of that one person. In the other, he is subject to the vagaries of mass behavior characteristic of the modern audience.

The kinds of relationships we would most obviously take note of in studying the behavior of artists would be the relations between artists and those who consume their products, be they audience, patron or what-have-you; the relation between the artist and other artists, such as relations of competition or collegality; the relation between the artist and those who have been appointed or have managed to carve out for themselves the position of judges of what constitutes acceptable art (such as critics or teachers); the possible relation between artists and people to whom they are subordinated in some institution or organization who are not artists, such as the nightclub owners for whom jazz musicians work; and the relation between artists and their families, both the families they have been born into and the families they have created by marrying. In looking at each of these relationships, we would be concerned with the degree to which the other parties in these relationships demand of the artist the kind of behavior we have chose to define as creative and the degree to which they demand uncreative kinds of behavior, and likewise the ability of each of these other to enforce his wishes upon the artist.

Sociologists have found the concept of career a useful one for understanding occupational behavior, and it should prove useful in the study of artistic occupations as well. For instance, we might study the distribution of creative behavior among people at different career stages in the arts, and discover that creativity was more likely to occur at some periods than at others. The sociological conception of career might provide a means for understanding the differential distribution of creativity at different phases of the career. To the sociologist, the notion of career signifies a movement among various positions in some institutional order. The positions vary in the compostion of the relationships between the member of the occupation and all of the other kinds of people with whom he has to deal. That is, in the case of the artist, we might discover that his relationship to audiences, critics, fellow artists, and so on, vary in the kinds of rules that apply and in the degree to which the will of others can be enforced on the artist at different positions in the set of institutions that make up the art world. Thus, career movement might be a potent source of variation in creativity. It might be that the earliest stages of the career are the most creative, when the artist is in a position where he is not important enough for anyone else to care much what he does, so that they grant him maximum freedon; on the other hand, it might be that only when the man has achieved a certain amount of success can he be free to ignore the wishes of others.

The first order of business, then, for a sociologist, would be to describe, for any particular art, the set of institutions and relationships that make up the world in which the artist practices and the typical kinds of careers or sequences of movement through those institutions. Having done this, he could relate the degree of creativity found to the differing positions in the world of artistic institutions.

A particular point of interest in the study of artistic institutions are the training centers in which artists learn their craft. I suppose this will be of special interest to the participants in this Conference because so many of them are connected with artistic training institutions. The sociological study of professional schools and colleges may offer some pertinent material here. The question can be put this way: To what degree do schools of art, like schools of other kinds, accomplish what they set out to do and to what degree are their ends subverted by problems of social organization?

One of the common findings in studies of professional schools and colleges is that students tend to develop what we have come to call "student culture." In strict analogy to the use of the term culture in the study of primitive tribes and other social groups, student culture refers to the understandings that students develop among themselves about what they are doing in school, why they are there, what they are trying to accomplish and what the best way to accomplish it is. Perhaps the most striking characteristic of student culture is that it often operates to produce quite different results from those the faculty of the school think desirable. For instance, college teachers often worry because their students seem so much more interested in getting good grades than in "really learning anything." Similarly, medical school faculties worry because their students are much more interested in learning how to treat common diseases than they are in learning the scientific basis of medicine. In both cases, the faculties have good reason to want the students to do other than the way they end up doing. That is, medical school teachers are no doubt correct in thinking that scientific advances will change the nature of the "proper treatment" for any disease within a very short time, so that it is inefficient for students to learn specific methods of treatment and far better for them to learn the scientific knowledge which will enable them to understand new methods of treatment as they become available.

Nevertheless, the students generally have good reason for following the ways they come to agree on as proper. For instance, even though college teachers think that students ought to be learning for the sake of learning, it is also true that they do give grades and that these kinds of grades a student gets has a tremendous impact both on his life while he is a student and afterward. Though it may seem materialistic of him, he is well-advised to be more interested in grades than in learning, for he will be rewarded in a hundred ways for getting good grades but will not be rewarded at all for having learned things without getting the grades. Though no individual teacher may have intended it that way, colleges are so organized that a student who gets poor grades will be denied many of the things he wants out of his college experience: he may not be able to join a fraternity; he may not be able to join or become an officer of extracurricular organizations that he considers important; he may not be able to get into graduate school; he may not be able to get the kind of job he wants after graduation; his dating and sex life may even be affected, improbable as that seems. All this because, somehow, the college has been so organized that those who have good grades are rewarded in all these other areas for their grades and those who do not have good grades are punished.

I have no idea what the arrangements are in present-day art schools. All I can do is raise questions suggested by our studies in other kinds of educational institutions, on the premise that the answers to these questions, should they be discovered through research, would help us to understand how and if schools in the arts contribute to the development of creativity or hinder its development.

Here are some of the questions we need to answer if we do research on the art student and the art school. What are the systems of reward and punishment within the art school? Are students, for instance, graded on their work? If they are graded, do the grades have much consequence for them, as students or afterward? If they are graded, and the grades have consequences, for what kinds of behavior are students rewarded and for what kinds of behavior are they punished? Particularly, does it "pay off" for them to be creative as students? Or is being creative to run a risk of failing as a student? Almost by definition, the creative person does not play it safe and therefore runs a greater risk of failing to produce anything at all; do the faculty of the art school take this into account in giving grades and evaluating students, or is it safer for a student to take the easy, conventional way and be assured of producint something more or less acceptable? Do students discuss their common fate and plight as students, or are they somehow kept apart so that they respond to their problems not as students but as individuals? If they do get together and develop a common cultural explanation of what it means to be a student, to what degree does this run counter to what the faculty might think desirable? If students have developed such a counter-culture, to what extent has it been provoked by actions of the faculty. To what extent are the faculty's most idealistic desires for their students at odds with their everyday teaching and grading practices? (This is a particularly important point, for faculties often say they want one thing and sincerely believe it, but their everyday practice demands of the student something quite different, whether the faculty realize it or not.)

Insofar as this Conference comes to focus on questions of training institutions in the arts, I might suggest that detailed studies of particular artistic training institutions are in order in which questions of the kind I have suggested will be investigated intensively. The arts differ enough in their intrinsic problems and in the kinds of training institutions they have set up that such studies should be comparative. That is, ideally we would want to study schools of music, of the plastic arts, of theatre arts, of the literary arts, and so on. And, to do it really right, we should study several of each kind: schools located in a university setting, independent schools of art, apprenticeship kinds of training, and so on. We should also study the "learning by doing" kinds of situations, such as the one in which the jazz musician learns his trade.

This is, of course, a very ambitious program of research, probably best carried out not as a crash program to be done all at once, but as a sequence of studies over as long as a couple of decades. It should, ideally, be coupled with a parallel series of studies of the institutions of art in the several relevant worlds: such institutions as art galleries, the Broadway theatre complex, the world of the symphony musician, and so on. Again, an ambitious undertaking. Nor do I mean to imply by this emphasis on the study of social institutions that other kinds of studies of creativity are not equally important. In a sense, then, the problem becomes a tactical one: given limited resources for research, where are the most likely points to begin our work? I might leave this as a question to be pursued during the Conference itself.

IV

THE OLDEST OF THE ARTS

Dorothy Madden
University of Maryland

If I follow the request of our chairman to "hang loose," I find myself paradoxically on both ends of the line, both swinging freely over the landscape of art and in the role of dangling the line in the fashion of an angler. Indeed I think the artist is a fisher of talent and expressiveness whether in himself or in his students. I realize the analogy opens up wide opportunity for humorous as well as poetic conjecture, such as weeds, bends, and lesser fish, but they are also part of the picture.

In any of the arts, composition is common ground and the varying technique and substance remain special and individual. Each has its separate dignity, and I assume all share certain gaps, as well, in the attempt to realize the present dream, and in the realization of the undiscovered by ways of creative behavior and creative potential.

The words that follow about dance are not therefore new or shaking statements, but to look at what they mean from the dancer's eye may reveal a new facet of the familiar. Dance as an art embraces the properties of aesthetics which have concerned philosophers, critics, and artists for many years. Intuition, beauty, form, communication, values, clarity, and meaning all play their part in the world of the dancer.

Much jesting has been made about the artist who is "off in a world of his own" or who "lives in a private world." Advantage has even been taken of the phrases by pseudo artists who adopt the shell of such atmosphere without the substance of its meaning and its hard, complex core of concentration. Indeed, it is complete concentration with the problem at hand involving delight, despair, searching, finding, losing, waiting, torment, wonder, and the omnipresence of the thing pressing to be done. It is a private world unintentionally and scarcely with the realization of its being so until the deed is done, and one emerges with much the same feeling as when one leaves the theatre after an absorbing play. It does not indicate unawareness of other human beings. One becomes, somehow, two people, and one of these exists in the "private world," no doubt very soundly called the subconscious by psychologists. Time is boundless, space is boundless. The capacity of the mind seems to be filled with a myriad of avenues through which one walks with a detecting, selecting eye, a highly sharpened ear, and determined tread. Sometimes the pace is fast and one is stunned to see the result completed. Other times the way is slow, arduous, and painstaking.

The creative process seems to be a constant companion when an idea is being evolved, and it is no respecter of time or place. It is difficult to say whether one inhabits the dance, or vice versa. There is a long period of growing quietly in the back of the mind, as if that other person of one's self were saying, "I will sit here a while. You go about your business and shortly we will work together." One has intermittent conversations with the idea, and it sits in apparent darkness, growing. Frequently doing mechanical things which take the place of pacing, become part of the thinking period. From time to time quite unexpectedly ideas will occur in the middle of some totally unrelated area or task.

After the period of gestation the idea is apparently ready, the point of view cleared, and the time has come to work in the material of dance, to search for the way to say "This is what I think. This is what I feel." Then one goes to the studio, and the potential is wrapped in silence in the miraculous structure called the human body which has a considerable assortment of levers, axes, fibers, that turn, twist, bend, stretch, propel themselves in any and all directions. One need only experiment with one arm, and endless possibilities occur. The arm can reach, encircle, reject, grasp, give, strike, slap, snatch, beckon, pull, wave, count, point, rotate, pump, swing, protect. Any of these can be done in different directions, at any rate of speed, in different rhythmic patterns, different levels, tensions, positions of the torso. All this just standing in place. Then there are all the potentials of traveling through space. So one stands, with a seeming infinity of movement possibilities cluttering the issue at hand. Once the choices have been found through improvisation, they must be organized coherently just as one puts words together in some order to make a meaning, continuing to develop the idea coherently into a whole. The whole area of gesture and movement becomes the possible vocabulary for the completed dance idea. The movement sense takes over.

The discipline and sheer hard work of seeing the creative act down to its last period demands constant pursuit and attentiveness, and many times, sheer doggedness. In the case of dance, there is an added demand of physical power, tensions, and energy. Gradually the form of the idea appears, and one refines, changing, shaping, hoping that the creative "gamble" will not come out on the negative side.

Any disturbance which interrupts the thinking process, once deeply involved in working, is a deterrent to the creative act. Impatience becomes the prime result, having first to be quelled before one can begin to recover concentration.

Having finished at last, putting into effect one's intuitive knowledge, craft, time, tears, patience, and excitement, one cannot help but allow for the undefinable miracle, mystery, or wonder that made it possible. Scientists, will allow for this undefinable element, as well as artists. Not how wonderful one's self is as a human being, but that as a human being one was for one moment part of some marvelous working. One cannot be part of the creative process and not experience wonder. The ability to find the delicate equilibrium amongst intuition, knowledge, faith, discipline, with passion, respect, and humility will make the idea emerge. There is no assurance granted that once finished, it will, as Walter Kerr says, "catch lightning in the hand."

The special property of dance is, of course, movement closely allied with those of time and space. Suzanne Langer says the primary illusion of dance is energy, and I am sure any dancer would agree. The pull of energies and tensions become the vocabulary. Dance is non-verbal in its full realization, and the symbol of communication becomes movement. Dancers feel strongly about the difficulty of describing dance in words, as indeed do critics and historians. The actual event of dance is not possible in words. The most banal explanation of an idea may emerge as unique choreography, and endless intellectualizing can result in boring movement. To rearrange a well known phrase - a thousand words will not tell one dance movement.

OF GAPS

An obvious gap, common to all the performing and visual arts and one which leads to layers of ancient frustration within academic halls as well as personal artistic trauma, is lack of reverence to the doer as well as the historian or critic or aesthetician. I do not cry to lop off heads. Quite the contrary. Yet I do ask that whatever any art is all about be given equal time. The act as well as the word is imperative and essential. It is the core, in fact.

It is not contradictory to the above to say that dance needs books - on history, aesthetics, composing, teaching. There are too few well written books on dance for student reference. Research, and time granted for research and writing is needed, as well as time and support for chroeography.

Within the circumstances of the teaching situation, there is great unevenness in the amount of time allowed in schools at any level, ranging all the way from "on rainy days" to four times a week for two years. This poses quite a dilemma when the varied backgrounds are assembled in a class at the University level.

Administrative and regional suspicion of dance still exists in many places, surprisingly enough. Prejudice resulting from unqualified teachers is a stunning deterrent to creativeness in dance. More students than I care to remember have been repulsed and lost to dance by the simple destructive pearl of folly - "I will put a record on, and you compose a dance." No one would even consider asking the beginning music student to write a symphony.

The tossing back and forth of the question of where dance belongs in the educational structure also sits heavily on the young artist who wants his identity realistically and honestly located.

The concept of how to grade creative studies within our present system of recording efforts in education should be thoroughly probed. I was once nearly dismissed for not having a check chart for dance and for soundly questioning how one could grade quality by objective tests. Here is deep fishing indeed, as even beginning students intuitively sense when a fine piece of choreography has been presented, or stare at the floor in silence on viewing bad dance. How do we explain the role of intuition, or intuition itself?

A dilemma which reoccurs each term of sixteen weeks is the decision regarding what shall be the proportion of movement skill and creative work. It seems apparent one must first know one's tools and craft in order to use them, yet in dance a technically unskilled dancer can produce a highly inventive study, and a skilled dancer can, conversely, be exceedingly boring. Could the inventive unskilled student compose "on" the more skilled, as has been earnestly requested by art students who feel an understandable affinity for the elements of dance composition? Or does not the factor of movement intelligence and movement sense the experience play too essential a role to allow for this last? Hindemith says that musical aptitude is not solely a gift from heaven but needs to be assiduously cultivated. So, too, with dance, I think, but I need to know more. Surely the late Louis Horst, musician and composer, who was such a guiding force in the artistry of Martha Graham and who eventually developed courses in choreography, would bear out the request of the art student--yet now everyone is Louis.

A further knotty point in composition evolves around the concept of rules. While the beginner seemingly needs guide lines and direction, as one progresses in the art of composing is there a point where rules inhibit spontaneity? Do they cloud or interfere with intuitive, creative thinking? A young dancer recently wrote "At the moment, my creative ability seems stymied by becoming aware of rules of choreography. I suppose, however, that this will pass as I go on." I do not know. I myself have experienced this barrier as have other dancers. I am not advocating disposal of form and discipline which is inherent in artistic achievement, but I wonder about this condition.

The do we compose to show, or not? Many teachers avow it is only the process that counts and not the product. The aestheticians write that the purpose of art is to express and communicate coherent feelings. The desire for man to speak to man, to communicate and to be understood is a touching and fragile component of the artist's world as well as a component of the human condition in general.

Having proved conclusively that my obvious means of expression is my own field, I leave in a heap the catch of my angling. What of: ----

Books
Prejudice, fear, and ignorance
Technique and composing
The rightful niche
Aesthetic judgment for the student, choreographer,
    teacher, audience
Intuition
Rules. Guides or tangles?
To show or not.

All seem part of the net of creative expression.

V

POSSIBLE AREAS FOR DISCUSSION IN THE UCLA CONFERENCE ON CREATIVE BEHAVIOR IN THE ARTS

W. B. Michael
University of California, Santa Barbara

1. How broad is the term "creative behavior in the arts?" Specifically, which of the following fields of creative endeavor might one consider profitably at a conference such as this one?

    A. Architecture

    B. Ceramics

    C. Dramatic arts (acting, direction, production, including legitimate theatre and cinema).

    D. Handicrafts

    E. Interior decorating

    F. Literary composition (writing of essays, novels, plays, poetry, as well as technical papers in the arts)

    G. Literary criticism

    H. Music (composition, conducting, direction, participation--ballet, instrumental, and vocal activities)

    I. Painting (and related visual arts)

    J. Sculpturing

    K. Study of aesthetics

    L. Other areas

2. In what ways may one approach the conceptualization and understanding of the nature of creative endeavor in the arts?

    A. How useful are psychological models involving inputs, mediating processes, and outputs?

B. How might Guilford's structure-of-intellect model be combined with another similarly devised model of the affective domain to explain components of creative behavior? Does the behavioral slab (representing one of the four content areas) of the familiar Guilford cube constitute an adequate basis for research concerning affective characteristics such as empathy?

C. How useful would a taxonomy such as that developed by Bloom and his associates for the cognitive domain or the one devised by Krathwohl and his co-workers for the non-cognitive domain be in the description of the basic dimensions of creative endeavor in the arts?

D. Can the models suggested in (B) and (C) be effectively combined?

3. To what extent is it useful, desirable, or even feasible to distinguish between products that are judged to be creative and the psychological processes (cognitive and non-cognitive) underlying the generation of these products?

4. What is the place of intuition (if one may assume that the term can be defined) in the creative arts?

5. What varied types of criteria should be employed to evaluate the quality of products of creative endeavor in the arts?

   A. To what extent is cultural relativity to be considered?

   B. What kind of balance can be achieved between stimulus-bound variables and subjective values?

   C. Through use of psychometric scaling procedures and psychophysical theory, can experimental psychologists develop a mathematics of the arts that will be meaningful and communicable?

6. To what extent are separate norms or standards necessary for evaluation in the arts relative to the existence of different philosophies or schools of art?

7. What types of cognitive and non-cognitive tests and related measures can be advantageously employed in the identification of individuals with high potentialities in each of the several fields of the creative parts that were cited in question 1?

8. What degree of success has been realized in the prediction of performance both in the training phases and in the subsequent vocational activities of individuals engaged in creative arts?

9. What are the implications of various psychometric devices, inventories, and other judgments for admission of students to varied educational programs in the creative arts?

10. How may allowance be made in the environment to take into account individual differences in styles of work such as those associated with a spontaneous or a deliberate approach or with an informal or a systematic orientation?

11. What types of campus climates, academic cultures, and teacher characteristics will serve to facilitate the creative productivity of students in the arts?

12. In what ways, if any, can instructional media in the sense of programmed learning devices or educational television be useful in the development of the talents of individuals working in the creative arts?

13. What would be several of the basic parameters and what would be the nature of the interrelationship among them to be postulated for the development of a comprehensive model of the teaching-learning process in the creative arts?

14. What are some of the major weaknesses in existing measures of aptitude and achievement in the arts--especially in the visual arts? Specifically, how can such evaluative devices be improved to ascertain creative potentialities or creative achievement of the individuals who respond to the items within these scales?

15. To what extent may one reasonably expect the critic of the arts (such as the newspaper or magazine columnist who writes reviews of books, plays, and concerts) also to be creatively productive in the field in which he writes and judges with so-called expertness?

Chapter VI

A FISH FOR JUDGING

Albert Christ-Janer
The Art School, Pratt Institute

"... a fish is badly placed for judging what the aquarium looks like from the outside." The Voices of Silence, by André Malraux.

The arts--free, applied and performing--are concerned today with catholic ideas. They are enriched by history, philosophy, and psychology, with physical and biological sciences, with the whole complex of intellectual activity going on all over.

How fortunate that this association has come about! When one sees the stunning contributions of physical science, for example, it is apparent at first glance that these products come from minds in ferment. These are minds restive, adventuresome, ceaselessly probing--minds like that of Robert Oppenheimer. This broadly interested scientist took out a few hours to discuss his visions of man's achievements. With his characteristic modesty, he declined to pose as a qualified sociologist, politician, economist, or philosopher. He spoke, he said, only as a scientist. And yet, from these words of his all of us may be informed and fired with fresh imagination.

Robert Oppenheimer began by comparing our time to the past. He stressed especially its one unique quality; it is radically and marvelously new. Simple processes of adaptation and of evolution will not serve to reveal its uniqueness. Our days are so vastly different from other days. The very essence of things is changing rapidly.

The speed of this change is almost beyond the credulity of those of us who have spun around in this changing world, from day to day. Even the youngest have already lived through the atomic period and that of the hydrogen explosion. In one moment we have been projected into a new era of man-made things propelled upward into outer space. In the next, we may be projected into God-knows-what; it may well be a period of inter-planetary transportation. So, as Mr. Oppenheimer says, "The greatest novelty of today is the dizzy size of novelty."

But Oppenheimer sends out warnings about the inability of man to adapt himself to the change of his physical condition, so that there is broad corruption of principle and of authority, of established faith. Further he says--and this is of utmost significance here--outward forms and the temporal order of things are changing, too. All of this amounts to an almost incomprehensible fluidity which, unless we are consciously alert to change and its meaning, may leave us dangerously insecure.

But only a weakling will resent this change and only a fool will deny it. As Oppenheimer says, "To accuse the changes that uproot us from our past seems quite futile to me and in a deep sense, unhealthy." The very character of our age is change. Anyone who is quick to life and responsive to the present condition will freely admit this. Any interested observer of modern painting form can see, for example, that Picasso has established and maintained his place of importance because he lives and breathes change.

> Whatever one may say of him, Picasso is the very personification of this change; his work is the manifestation of the quickly moving times in which we live now.

Perhaps the fascination in which this 20th century personality holds us is that we can see in him a joyful approval of the main condition of our time. He, like Robert Oppenheimer, recognizes and welcomes change.

All around us, then, we see invention and transformation such as civilization has never known; at no other time has man seen such violent alterations in the basic conditions of his existence.

It is not hard to join Dr. Oppenheimer in his one absolute statement, which is, "I have faith in knowledge. Knowledge is good, intrinsically good."

With knowledge of fact we proceed to wisdom, the amalgamation of knowledge. By relating, the mature mind searches for and finds truth. It is in this quest that the artist must become profoundly involved--beyond the bounds of pure science where, as Dr. Oppenheimer says, "Questions of good and evil do not arise." In this value area the artist, who is concerned with the characteristics of life in its varying qualitative degrees, is concerned.

The artist, and the teacher of the arts in their various media, must daily and unflinchingly face the condition of science.

Every change must be welcome, but very new state of affairs must be evaluated. Every new day must be described; every new achievement recorded.

All this activity, all this watchfulness, all this thoughtfulness, must be expressed creatively in suitable form. And this form cannot be a past form which describes other times, before this sequence of unbelievable changes in this modern world occurred. Recent decades, marked by these short lived but almost blinding epochs upon epochs of change, are ours and we must create the forms for these.

How can these forms be described? What are the adequate forms? Well, they will be obvious and, therefore, they will not be popular.

Though members of a democratic society, scientists and artists are limited in their communication with fellow citizens. Again quoting Dr. Oppenheimer, "The scientist today finds it difficult to raise his voice because he cannot be understood. The scientist does not really belong to the society in which he lives. He can take no more action and exert no more influence on his government than the artist and the philosopher, for example. His ideas and his work have become to a degree incommunicable." He goes on to say that, "The fact that the scientist, or the artist, or the historian does not intimately belong to the community around him may be more than a problem. It may be a tragedy, and the community can deprive itself of him only at the price of a great loss and danger."

The artist like the scientist, it seems to me, must give up the idea of being generally understood. He is not like a Leonardo who could aspire to, and did achieve, a relatively universal knowledge and a popular audience. The slower, smaller world of Leonardo permitted him this grand encompassing which we today look back upon with wistful nostalgia. The world of today will no longer grant any man such a broad privilege. The changes which have come upon us have been too fundamental and have come too rapidly to be comprehended by any one, scientist or artist.

Because of this condition of breath-taking change, restrictively penetrating knowledge, and of resulting isolation, one must be resigned to the thought that the artist, like the scientist, must exist more privately. He is alone in a sense in which he was never alone before. Even the dilettante looking at the common form of the Florentine painter, for example, can realize this fact immediately when he compares that charmingly intimate condition with today's complexities.

Nonetheless, there should be no regret in the heart or mind of creative spirits as they study modern man's situation. Rather, should he respond to the condition which has been so dramatically developed by the scientific mind in ferment. This response should create the most difficult of all our forms:

> A form which, though personal, though subjective, though existentialist--speaks nonetheless to some other's private but so important condition.

These new art forms, which confound so many who stubbornly insist upon identifying art with nature, are varied. Their variation should be welcome as signs and symbols of the truly new grasp of the modern artists, as each views life and his condition from just where he sits. Courageously, he expresses his personal decision in a world which he can know only in part. How brave of him that he will go to endless trouble, to work alone, to tell about himself; to uncover a form which will, in part, describe his time and to an extent all man's condition.

This is no easy way. It is not the most comfortable way to live; the subjective artist, like the investigating scientist, must depend so much upon his own strength; he has to think so deeply and so lonely about his time, a time not readily apprehended.

Yet this unavoidable condition of change, so urgently described by science, is inevitably that which the creative mind must welcome. No matter what the perplexities of the populace, as it views the products of those who seek fitting forms to express the changing world and no matter what the discomfort of the creators who are isolated in misunderstanding, the struggle for adequately expressive forms must be the main occupation of artists. Absolute standards, so comfortable for so many, must be discarded; familiar forms, so reassuring to most, give way to adventuresome, disturbing forms.

Robert Oppenheimer's words show change itself to be the condition of modern life. Clement Greenberg, reviewing Mass Culture in his revealing book, shows that the forms of change are, of course, the expression of the modern world. And he properly warns,

> "A society, as it becomes less and less able, in the course of its development to justify the inevitability of its particular forms, breaks up the accepted notions upon which artists and writers must depend in large part for communication with their audiences. It becomes difficult to assume anything. All the verities involved by religion, authority, tradition, style, are thrown into question, and the artist is no longer able to estimate the response of his audience to the symbols and references with which he works."

Modern dynamic life cannot be satisfied with motionless Alexandrianism and academicism; the important issues cannot be left untouched. Creative activity cannot dwindle to virtuosity. As Greenberg lists them, "mandarin verse, Roman sculture, Beaux Arts painting, neo-republican architecture"--these form imitations are the product of minds incapable or unwilling to accept the condition of their time and place.

Greenberg goes on to point out that the hopeful sign in our present society is that some creative minds are unwilling to accept a decadent manner of interpreting modern life. The artist will try to go beyond Alexandrianism, or form imitation. He freely admits that Oppenheimer is right when he says that too many today frequently entertain illusions, simple views anachronistic and inadequate for our time and condition.

We adventure into forms unheard of before in any bourgeois society: today's avant-garde form. This is the kind of form, the only kind of form, which will satisfy the requirements of life today, which has been so affected by Albert Einstein, Robert Oppenheimer, Nils Bohr, and their fellow scientists. It is a form which enables those motivated by similar stimuli and engaged in connecting activities to converse, even as the physicist might converse within the same science or the same scientific branch. As Oppenheimer says, "It is possible for a physicist to understand a physicist from the other end of the earth while he might be confounded by a chemist within his neighborhood." Likewise, the specialized form and the subjective form, the avant-garde ventures, may communicate to someone in Japan while this form will be incomprehensible to almost everybody in the artist's home town.

Widespread communication is certainly going on in the various media. However, this communication is limited from kind to kind. One kind of artist will not understand another kind of form. Even in the half century during which he has been a prolific producer, Hans Hofmann hasn't connected with Thomas Hart Benton, and it seems doubtful if Robert Mallary could make Paul Manship smile if he tried for fifty years.

Then there is another connection through communication from type to type, to expand a biological word. Quite reasonably, those are in communion who may be so classified on the basis of compatibility, who are somehow naturally empathetic. A Robert Oppenheimer may be better understood by me than many artists would be. And so it is not uncommon today for a physicist to be more sympathetic to an abstract artist than would another artist who does not dote on abstractionists. Believe me, any artist who reads that sentence knows what it means!

So, who can accurately judge our time? From what vantage point is the truth perceived? This complex time, when the Tower of Babel seems to be erected again and on a grand scale, offers no simple answer to its critics. But it is plain to see that the subjective expressions of the gifted, in all the creative areas in which man works, are enriching all mankind, not only in this time but for all time to come. Finally, the gold will be sifted, as it always has been.

VII

REFLECTIONS ON THE STUDY OF THE DEVELOPMENT OF CREATIVITY

Joseph Glick
Yale University

I find myself in the rather amorphous position of being the last minute replacement for a man who I feel could contribute much more than I. In short, I am an imposter--a developmental psychologist who has been monumentally unconcerned with problems of creativity, and a bad amateur poet whose knowledge of creativity is suspect, if not utterly lacking. Given this double burden, I have no choice but to be presumptuous.

This presumption, has at the middle of the second day of this conference, let me to attempt to summarize some of the trends that seem to be emerging, and to present the beginnings of a theoretical framework.

It would appear that there are four rather diverse groups of individuals represented at this conference. First, there are those who are actively involved in the problems of administering academic programs in the creative arts. These people are faced by the real and pragmatic problem of selecting from a multitude of applicants those who have the best chance of succeeding in the field. In the face of these problems they have turned to behavioral scientists with the plaintive cry, "give us a test that helps."

The second group feels that the administrators have come to the right place. "Yes," they say, "we have the tests but we need some more time."

A third group consists of the artists themselves, whose most common reaction seems to be, "why am I here?"

Fourthly there are those of us who are convinced that the artists are here for a very good reason: we cannot select for, or develop tests about creative talent" without a firm grounding in, and feel for, what the process of "arting" and "creating" is all about. We call for the bending of efforts toward the development of a psychology that is based upon this groundwork.

Perhaps the contribution that I can make to this conference, is to expose for discussion a point of view in psychology that starts with an effort to characterize man as an essentially creative being. I feel that this approach, while not serving the direct function of distinguishing the most creative from the least, does serve to put the problem in perspective. The question of perspective is an important one, since the answers we find are in large part determined by the questions we ask.

One of the things we are beginning to realize about people is that they are actively engaged in selecting and structuring their information about the world. The "New Look" in perception psychology showed us that the objects that we see are in good part determined by our expectations. Some linguists have attempted to show us that our language systems determine our view of the world (the Sapir-Whorf hypothesis). Most fundamentally there has been an increasing recognition that the human organism is an essentially "symbolic" organism, that selects information and "constructs" it into a uniquely human world.

Although this position is not grounded on a basis of firm and incontravertible fact, it does represent one of the major themes of philosophy (critical idealism) and modern developmental psychology (genetic epistomology). What I should like to do here is to show that one approaches the problem of creativity in a different manner when this position is adopted, than when a non-constructionist position is adopted.

If one approaches the problem of creativity from the standpoint that the world is known to us in some direct and non-constructive manner we tend to set the creative artist apart from his fellows and treat him as one who is divergent or visionary. In the Freudian tradition we are often prone to seek for a fundamental sickness (or conflict) that underlies art or poetry or other creative endeavors. Creativity is something to be explained away; vis shown to be the result of some factor other than itself. Accordingly, we come up against the "myth" of the neurotic artist and the painful discussions concerning whether one's art would suffer if one went into therapy. The attitude toward creativity inherent in this view is that to "create" a poem, or a painting, or a dance is to escape what is real. I believe that a similar attitude underlies approaches to creativity which focus on the "restructuring" and "divergent thinking" characteristics of the creative act. Here, the emphasis is still on "divergence," and on the aspect of artistic creativity that one might term "the vision."

While these latter investigations touch upon what is perhaps an essential ingredient of creativity they focus on only a limited part of it. What is omitted is that which is so central to many artists' conception of their art; the aspect of artistic "problems," of work, of craftsmanship, of discipline.

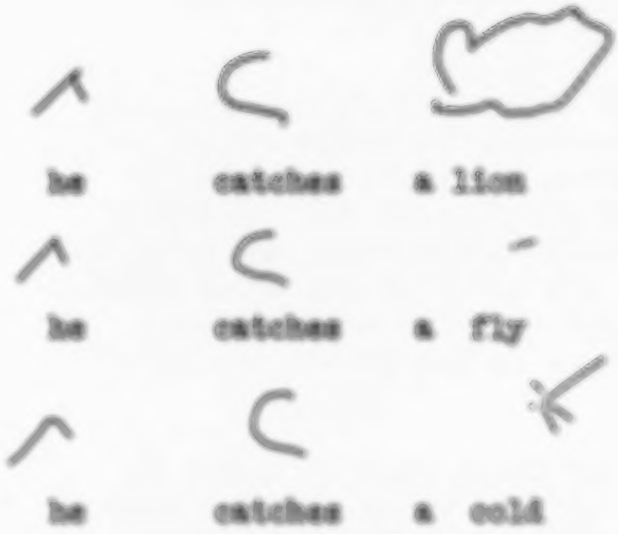
These latter notions take on central importance in a psychology of creativity that focusses on the constructive nature of human cognition. One central tenet of this view is that our knowledge of the world is "formed" within a medium of symbolic expression. That is to say that our ideas become communicable and public when they get out of our heads into some form that is material, and hence capable of being shared by another.

Most commonly our ideas are formulated in terms of words; our linguistic system. Such linguistic systems have rules of operation (syntactic structures) and rules of classification (semantic structures) which may determine the way that we think about events in the world. It is equally possible that there are other "symbolic media" which have different rules of operation, and which have a good deal to do with other kinds of "knowledge." Thus, painting, dance, poetry and drama might be looked at as various kinds of languages, each of which has certain rules and strictures that play a determinate role in our thought. Perhaps this is the basis for the meaning of such obscure sounding phrases as "artistic reality" and "artistic truth."

These considerations enable us to encompass the aspect of art that is work, craftsmanship, etc., by enabling us to begin to understand the nature of an artistic "problem." The artist is faced by two elements of his art that must be brought into proper relationship; on the one hand is his "intuition," or ideas, and on the other there is a material medium within which these ideas may be realized. The medium is governed by certain properties and rules of operation within which the intuition (which may be initially phrased in a different medium, such as language) must be expressed. The problem faced by the artist is one of "translation" of idea into material form.[1]

I should like to illustrate the properties of different symbolic media by drawing on a few rather experimental examples. The kind of study involved here is one in which the formulation of an idea is studied as it is represented in two distinct media. Let us take, for example, the linguistically formulated ideas, "he catches a lion," "he catches a fly," and "he catches a cold."[2] It should be quite apparent that in our pragmatic activity the act of "catching" is a radically different act in each of these ideas. In the case of the lions, one is awed and circumspect, setting traps and hiding. In the case of the flies one is direct and bold, directly advancing on the prey with a swatter or a jar. In the case of a cold one is passive and chilled. In linguistic expression, however, the structure of the sentence does not distinguish between all of these types of catching. Three of the words in the phrases are identical; the actions, and their connotations are not. In fact, in linguistic expression we can see that a "unitary" event is segmented into somewhat arbitrary units. In experience the act of catching varies with the object caught, in a "unitary" event.

The unitary characteristics of the event are brought out when one switches to a different medium of expressing these ideas. If subjects are required to express these ideas in an expressive line drawing, we see that the linguistic means of representation is superseded by a different means which is less segmented in characteristic. I reproduce below two possibilities of expression of the three ideas in the expressive line drawing medium one of which is just a logical possibility, (Fig. 1a) and mirrors the linguistic structure, and the other, (Fig. 1b) what most subjects actually do.



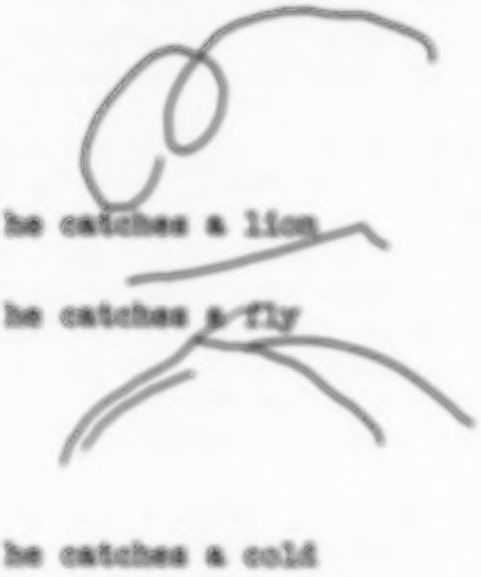


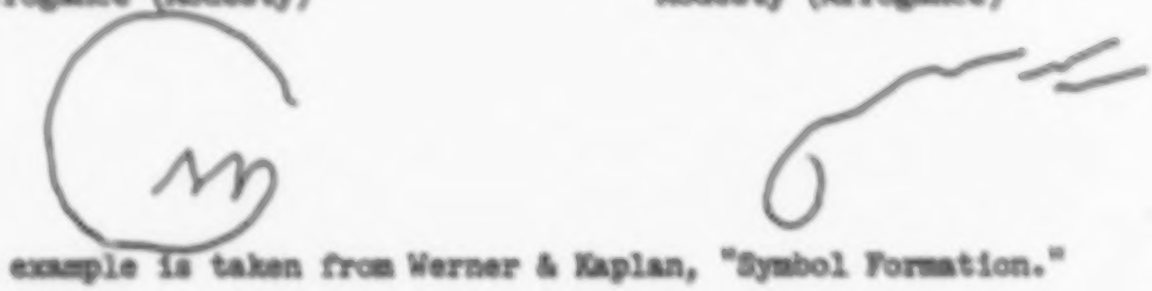
Fig. 1a A linguistic use of the line medium

Fig. 1b An expressive use of the line medium

In the first example I have attempted to illustrate how an expressive line drawing can mirror in structure a linguistic utterance; the units, "He" and "catches" are given a constant form while the object of catching changes. This is an essentially linguistic hieroglyphic device. In contrast, figure B, indicates a different way of representation. Here there is no clear and distinct separation of the aspects of the situation, and accordingly there is no "constancy" of the elements of the sentence. The total character of the representation mirrors the unitary characteristic of the experience: Both "He" and "lion" are interpentrated with "catching." We might be able to see the same processes at work in a painter's attempt to depict these ideas. Although in a representational painting "He" and "lion" or "He" and "fly" might be kept as separate elements of the painting, the depiction of the "he" and quite possibly the technique of painting will differ in the two contexts.

While the above may be different in different media, there is a more radical relationship between idea and medium. This proposition is that the "ideas" themselves become changed when they are structured in different media and that different properties of the medium are brought out by different ideas. For example, take a look at the patterns reproduced in Fig. 2.

Fig. II[*]



Arrogance (Modesty)

Modesty (Arrogance)

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[*] This example is taken from Werner & Kaplan, "Symbol Formation."

Ask youreselves the question: "how do each of these line patterns represent the concept of arrogance? of modesty?" "What are the connotations of these concepts that are shown in the line patterns?" Now that you have a tentative answer to these questions let me play a nasty trick on you. Suppose that the arrogance pattern now represents modesty, and the modesty pattern represents arrogance. Ask the same two questions of these two new relationships as you did of the first.

This trick was played on several subjects with quite suggestive results; first it was found that the same line pattern was seen differently when it was used to represent opposed concepts; and second it was found that the meaning of the concept was changed, depending on the line pattern used to represent it. These two kinds of "rotations" (of structure of drawing; and meaning of concept) illustrate the principle of the intimate relationship between idea and medium which I believe characterizes the "work" of "art."

To summarize the argument, I submit: 1) that symbol formation involves two processes, idea production (restructuring) and work concerned with realizing the idea in a material medium (symbol formation) 2) that work and craftsmanship involve a process of "rotation" whereby the symbolizers' meanings are shaped in terms of his medium of expression, and the medium of expression is simultaneously shaped by the meanings.

From the analysis of meaning-medium relationships presented above it is possible to identify the absence of creativity in two different spheres; a difficulty of "restructuring" to form ideas, or a difficulty of integrating the material medium and the idea (difficulty of rotation). These two independent sources define a dimension of lack of creativity that runs from "conventional mannerism" to "bizarre productions."

In closing, I should like to show how this formulation of the problem bears on two rather interesting observations presented here by Frank Barron, and by Kenneth Rexroth.

Barron has shown that in the group of highly selected creative people that he has worked with there are certain personality characteristics that differentiate them as a group from the normal population. On the MMPI, the dimensions of "schizophrenia" and "ego-strength" are inversely correlated in the normal population. In the creative group they are positively correlated. If we make the rather loose translation and call the schizophrenia dimension an index of "novel-idea production" and the "ego-strength" dimension an index of the ability to "work" with these novel ideas, then it might be said that "creativity" involves both the ability to form novel ideas and to work with them (craftsmanship). On this analogy, we might find that highly "conventional" and manneristic artists may rank high on ego-strength and low on "schizophrenia," while the more "bizarre" types of artists may show the reverse pattern.

Mr. Rexroth has pointed out some features of the poet's training which I believe has some bearing on the position I have presented here today. Both he and Mantle Hood have pointed to some unique types of educational procedures which have been utilized with poets and musicians. The idea is that in order to "train" a young disciple the master and student enter into a close living arrangement, the student becomes the master's companion and servant. Aside from the obvious convenience for the master, this arrangement may have a great deal to say about the "ecology" of the creative artist.

The unique feature of such a close living arrangement is that the master and disciple, by virtue of sharing a very close physical and interpersonal context are able to communicate in a media which is not conventional. Luria and Yudovitch have shown that closely shared interpersonal contexts foster a kind of speech that is not formulated for explicit and exact communication to a distant other, but rather leads to "an inner-speech" which is more elliptical, and less highly conventionalized. It is quite possible that the formulation of thoughts in a linguistic medium designed for precise communication to others (more or less our 'normal' language) may inhibit "re-structuring." And, as well, translation of ideas into a different symbolic medium. If so, then the close living arrangement of the student and teacher allows for a less conventionalized medium of expression. We may then specifically look at the background of creative artists and look for signs of some intense, and close personal attachment, which may have allowed for the utilization of "inner speech" patterns.

If research oriented toward this latter problem proves fruitful it may be possible to venture some thoughts about more general problems of education in the creative arts. If the formulation of thoughts in a medium for precise communication to others is an inhibitant to restructuring, then educational procedures, especially classroom situations, which make so much use of the conventional linguistic system for communication, may actually be inhibiting artists rather than training them. I do not believe that you can go from conditions of "precise" communication to art; the order is rather reversed. What is possibly required is a procedure whereby the process of education allows for a gradual "externalization" of an intuitive idea. The educator takes on the role of a guider of the externalization process. This approach fits in with what we are beginning to realize about education: a guiding of the efforts of an active individual, rather than an imprinting of knowledge on a passive recipient.

To sum up the basic argument: I have attempted to show that if we begin with the assumption of an active, symbol-making organism, we place creativity in the arts in the realm of basic human functioning. This placement of creativity in the mainstream of behavior mitigates attempts to derive creative activity from sickness, and underplays the "divergence" notion. As a position contribution it allows us to see art in its dual aspect. The creation of "new ideas" and the process of craftsmanship. These are seen as reflecting the basic process of symbol formation; the fitting of a meaning to a material medium. Some implications from these ideas were drawn in the realm of personality, education and ecology.

An apology is also in order. The arguments are drawn with broad strokes, and in caricature. Though possibly suggestive they are neither definitive nor fully documented. Some of the background information, and attempts at documentation, may be culled from the sources presented in the bibliography.

Appendix

Some observations on the construction of tests.

In the main body of the paper one might have sensed a rebellion against current tests of creativity. In the present section I should like to evidence my restiveness on a more down to earth level. There are two objections that I have; one concerning the criterion groups used in constructing tests, and the other concerned with our interpretations of the relationship of test scores and subsequent adult performance..

Criterion groups.

Typically when one approaches the setting up of a test for any train, one starts with a large pool of items which are presented to groups of subjects who have been pre-selected to possess this trait in greater or lesser degree. The test items which discriminate between these groups are then selected to compose the test. We may then perform all kinds of mathematical and conceptual operations on these tests (e.g., factor analyse them; "name" the factors analysed). Most of the discussions about the tests are then about the names the factors are called, and how well these items correlate with other items outside of the test proper e.g., intelligence. What is lost from sight is the curious procedure by which we got the items to begin with. How were our criterion subjects pre-selected?

I was quite amazed to find that for several "tests of creativity" the ultimate source of test item selection was difference between groups selected on the basis of high-school teachers' ratings of most creative and least creative students. If there is one thing that all about? If we base tests on criterion groups selected by high school teachers, and then base decisions on these tests all we are doing is "institutionalizing" the very point in the system that is suspected of being weakest. We are letting a defective mill select its own grist.[1]

The wasted talent issue.

When we have finally constructed a test of "creativity" and given it to huge numbers of high school, college and art school students we are now faced with the issue of whether the test is of any practical value. Is it a good instrument to predict actual creativity? The ultimate criterion for this decision is whether those students selected by the test as being most creative, are, in fact, most creative when they start to function in the world. This is the question of predictive validity, or of "wasted talent." Unfortunately, these two opposed concepts have the same empirical basis. If a student scores high on our test, and turns out to be a clod in his later life, we may either say that our test is no good, if we want to blame ourselves, or that this child has had his great talent (as truly measured by our test) wasted. It is imperative that we conduct studies to distinguish between these two interpretations of one and the same fact. One kind of study to deal with this issue is to investigate, as special experimental groups, those people who cross us up. If we find some specific factor that characterizes these groups, then we have a more adequate basis for assessing both our subject and our test.

I believe that the sum and substance of these last remarks are that it is a pretty fruitless task to attempt to devise tests of something if we have no clear idea of what that something is.

Footnotes

1. Although I shall not deal with the question here, it is possible that there are "restrictions" and "rules" of two types; the first being conventional in nature (for example the sonnet form), and the other being more directly contributed by the physical nature of the media themselves (for example, pictorial representation allows for the simultaneous presentation of different aspects of meaning, while music, language and dance involve a sequential presentation). What is common however, to both conventional and physical limitations is that they pose for the artist certain problems of expression of ideas; he may utilize these properties inherent in the medium as did Eisenstein with his technique of "montage" or may try to transcend the medium as we can see in the attempt of Op art to make a "simultaneous presentation" successive.

2. It should be noted that the kinds of "ideas" dealt with here are those which refer to actual events. In this instance we are dealing with the problem of how an event is "represented." We know, however, that art is not necessarily "representational." It should be recognized that the use of "representational techniques" here is an experimental convenience, and that room must be allowed for a type of "idea" which has nothing to do with actual occurrences. The question of the nature of these other types of ideas is perhaps one of the major researchable questions.

Appendix Footnotes

1. It would be of great interest to see if there is any relationship at all between competent creative artists judgments of a student's "creativity" and the judgments of that creativity by high school teachers. Studies of this kind must precede all of our so-called objective sampling procedures whereby we becloud the basic issues by sampling large numbers of children from all conceivable social and geographical subdivisions. The problem is not one of quantity of sample, but rather one of quality of the sampling instrument.

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VIII

THRASONICAL RODOMONTADE;

OR,

HOW TO SAVE THE THEATRE BY SURRENDERING HEART AND SOUL TO THE BEHAVIORAL SCIENCES WITHOUT COMING UP FOR AIR OR FOOTNOTES

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University of Minnesota

Whether I am directing, producing, or translating a play, writing criticism, or teaching acting, dramatic literature, or theatre history, I prefer to insist that my field is cultural anthropology. Now, mind you, I don't say I am a Cultual Anthropologist. I'm surely not professionally qualified to be one. And I probably could not adequately describe what a professional Cultural Anthropologist is. I only insist that my field is cultural anthropology. I do this because if I say I am in drama, or theatre, or that I am a director, playwright, critic, or a drama or a theatre teacher people engage me in discussions that have no connection with my real work, mainly because both the lay and educational methodology applied to my field have little to do with it.

The practitioners, including myself, behave as if they were involved in some sort of freemasonry, the secrets of which must be concealed from the outer world, and indeed have developed an ingroup language and ritual that functions well enough to produce art but not well enough to define that art.

The theatre, particularly its training apparatus, could use help, but the problem is not so much one of communication as identity. Therefore, I must engage in a foolish foray into converting the area of my own research, "The Education of the Actor," into the metaphors of science as they filter through to my obdurate mind in the hope that the behavioral scientists will not feel so foolish talking about art, even when they are.

So I should like to declare vaguely that I am concerned with modes of behavior and with the explicit and implicit values and ideas involved in human action. I could be more honest and confess that I am preoccupied primarily with the nature of experience, with what it is like to be alive, but that gets me into trouble because either I am lumped in the "inarticulate and uncooperative creative artists," a term I consider to have been invented by uncreative artists, or else I am spotted by the literature as an existentialist, which leads to them talking about their ideas about the nature of theatre and then, by one of those easy intellectually unauthorized leaps that conversation permits to men who think they think, to formal considerations, such as "After all, did Brecht really write plays?" Nor is it wise to associate myself with theatre among educationalists, of whom there are far more in universities than is commonly supposed (by analogy with the ancient theorem which states that there are more horses arses than horses), because I then become an extra-curricular instrument for the broadening of shallow men.

No, it is far safer to be obliquely a cultural anthropologist whose field of research is theatre, even among cultural anthropologists and social scientists, who become surprisingly "aesthetic" when they talk about theatre, although I generally find they really regard theatre as a leisure time activity more respectable but less pleasurable then, say, liquor or adultery.

Now my flippant scepticism here must identify me to some as an uneasy humanist of the type who can contribute nothing to the methodological suggestions that are all that can emerge from a conference of this scope. That is true, for I find that on such occasions we are all jesting Pilates who ask "What is truth?" and do not wait for an answer. Like Pilate I am a relativist but, also like him, I can go along with a joke, and since all methodology is a joke in the end, an entertaining process that arrives at a surprising but obvious point, I am all for ways and means to deal with the problems that conceal the problems we ought to be dealing with, on the grounds that truth may reveal itself through a punch line.

Since I am a theatre man, I want first to make a ridiculously blunt observation. The experiences of the theatre practitioner and of the audience are two vastly different things, and that of the practitioner is more different in proportion to his skill and experience as an artist. In educational terms, to give a student a dose of participatory amateur theatre is only to enhance his sensitivity when he attends the theatre as a member of the audience. Whatever professional actors may proclaim about serving humanity, needing audiences, etc., the more one becomes a theatre artist the more one learns a private language that shapes the material one deals with into a personal involvement that has only an accidental connection with what happens to an audience. I hesitate to extend this to the other arts but I believe that the practicing artist's experience is complexly private, even an escape from his involvement in society, and that it serves to convert him into a kind of symbolically charged single particle of society that may mean different things to different people, depending on the circumstances under which they encounter him and on the way in which they relate him to other phenomena.

This may be only a way of saying that the making of art and the appreciation of art are disparate subjects and should be so treated, especially by those involved in the identification of creativity within the educational environment, since until one faces the making of real art one may be either a latent creative artist or a latent creative audience.

I shall skip the audience (although it may be of vital concern before this conference is over), only noting that playgoing seems to me to be a personally integrating experience brought about by receiving an image of life that communicates the cohesion of society.

Conversely, I might note that the actor experiences little of such pleasure after a real performance. A kind of detumescence sets in, even a fear of being inadequate to the next demand. But, in the long run, the actor, of course, recovers, gets his batteries charged (to use an obsolete image) and resumes his function, provided he is not found inadequate to the process for which he has been designed. I am willing to see the actor as a problem-solving machine (as indeed, in the face of computor science, I am willing to see anything as an arrangeable problem). I am not sure what the actor solves. It has something to do with the recreation of an idea of experience, what Aristotle, in the light of modern commentators, meant by an "action." But I suspect that the problem is set, or programmed, by others, playwright and director, and that his ability to solve it is a matter of this sophistication or complexity of instrument, not rational mind.

For the actor is concerned with how people behave, not why, and his technique consists in: 1) his capacity to store vast amounts of observed material; 2) his ability to communicate it through his physical apparatus. The latter point is important. Amateur actors, beginning actors, untalented actors are simply not complexly enough instrumented to solve real problems, whatever their access to data. I even doubt the access to data of the incomplete actor because I think the storing and arranging process of the actor is peculiar to him, that the good actor devotes much of his pre-acting life to it, whether he desires to be an actor or not, and that the key to talent identification lies in the process.

I could put this in 18th century terms and define the actor as one of those who possess the faculty of "Wit," the perception of congruities among incongruous things, and of incongruities among congruous things, but that involves the kind of insight that can be tested only by longitudinal studies.

My major point is social, that the real actor is a particular kind of person worth studying if only because he deals with life in an uncommon way, because he is an unusual problem-solving instrument. He is not well adapted to society. That is axiomatic, almost historically demonstrable. I should like to believe that he is not constituted as an aberrant personality, the neurotic genius, marginal lunatic, etc., since I have observed that a pathological condition, or even a disturbing failure to come to terms with society, does damage his performance. I'd prefer to believe that the good actor survives satisfactorily in society and that society does not accept him fully because he operates differently from conventional patterns.

He rarely fits into prevalent educational systems, and where standard admissions qualifications are established across the board in colleges and universities, theatre teachers painfully note that there is little correlation between talent and the usual tests and admissions criteria. Yet the good actor obviously has a good mind, is perceptive, can master any subject he puts his mind to, but habitually uses the results of the knowledge he acquires in what appear to be strange ways.

That's enough, since it is inadequate. Within my blindered perspective, I note that the actor is inadequately trained for serious theatre within our degree and non-degree granting educational system, that society appears to thwart and frustrate him even before he knows he wants to be an actor, and that his art may be of value to society in itself, outside whatever it provides audiences in performance. I suggest; 1) that attention be paid to the experience of the actor in society, through comprehensive biographical career study of actors, with an eye not to psychological character formation but to his role playing in society; 2) that efforts be made to identify acting talent in the young and to experiment with means of nurturing that talent, using criteria based on professional standards and demands, and not the criteria of programs in educational theatre; 3) that the learning process of the actor as well as the creative process of the actor be studied.

By addressing ourselves to the identification of acting talent, and to the way the actor operates in society and in his work, we may begin sometime to consider the nature of the particular problem-solving machine he is. We may find means of applying the artistic process to other problems in society. We may even learn something about art, aesthetics, and criticism, but that can wait, perhaps a long time.

Chapter IX

THE CHILD AS CREATOR OF HIS LANGUAGE:

New Approaches to the Study of Syntactic Development in Children

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> "But education must also seek to develop the processes of intelligence so that the individual is capable of going beyong the cultural ways of his social world, able to innovate in however modest a way so that he can create an interior culture of his own."
>
> --Jerome S. Bruner
> (1962, p. 116)

The ideal which Bruner holds up for education--a process of individual innovation going beyond what is given in immediate experience--also describes a course which each human being has already traversed long before his entry into the formal educational system. Recent studies of child language have changed our conceptions of the nature of the child and of his activity in early cognitive development, revealing a picture of an active, creative little human being, going beyond the limited number of sentences he has heard in his lifetime to construct a working model of his language, "to create an interior culture of his own." Surely the creativity and flexibility of the child illuminated by these studies cannot be limited to the realm of early language learning alone. As Miriam Lindstrom has said in her charming little book on children's art: "As a child learns to talk he also develops his visual imagery. We can get a glimpse of his view of the world if we look as well as listen. Liveliness of fantasy, dynamic spontaneity, intensity of emotional response, enthusiastic pleasure in making and doing--these are characteristics of the art as well as the speech of children up to the age of seven or so" (1957, p. 2). It is my hope that the following rapid survey of the psycholinguistics of early language development can be fruitfully related to other aspects of the creative potential of children.

The study of the development of language in the child had intrigued and puzzled adults since antiquity. The cognitive abilities of a little child seem to be generally rather limited, yet he masters the exceedingly complex structure of his native tongue in short order. Much attention has been paid to the child's learning of the sounds and meanings of his language, but his developing control of grammar has only recently become the object of careful, systematic study. This study is beginning to add depth and subtlety to psychological conceptions of man; indeed, in the past half decade or so there has been a revolution in psychological thinking about the child's acquisition of syntax, and in the short space I have here I would like to try to convey some of the flavor of this new outlook.[1]

The immediate impetus to this new look comes from modern linguistic theory--primarily that of the sort of generative, transformational grammar developed in the last decade by Noam Chomsky and his followers at MIT (Chomsky, 1957, 1959, 1964; Lees, 1957). The hallmark of this sort of approach is its emphasis on man's ability to deal with an endless variety of novel sentences. We are almost never called upon to create new words, and most of the sentences we hear do not contain new words to be understood, but we are continually being called upon to create and understand new sentences. And so one of the prime questions of modern linguistics--at least as it is formulated by men such as Chomsky--is that: How can a new sentence be produced and understood? This is, of course, to a great extent a *psychological* question. We can learn our vocabularies by rote; we cannot learn our sentences by rote. This impels us to speak of the learning or formation of rules, whereby we can project a limited amount of experience with a limited number of sentences to the capacity to produce and understand an unlimited number of sentences. The use of the word "rule" in this context is perhaps unfortunate--it leads people to think that we believe that children can state explicit rules of grammar. This, of course, is not what I have in mind; none of us can state all of the rules of English grammar. What I mean is that the child has learned much more than a list of specific word combinations; that he has acquired knowledge that makes it possible for him to go beyond the specific collection of sentences he has heard.

I want to come back to this notion of linguistic rules at the end of my discussion, after I have given you some examples to work with. I think you will see that this approach has important implications for discussing the role of imitation in language learning, and for the methods of studying language learning. Until recently, behavioristic psychology looked upon language, and the task of first language learning, as just another form of human behavior which could be reduced to the laws of conditioning. The picture we are now beginning to form, however, is that of a child who is creatively constructing his language *on his own*--developing new theories of the structure of the language, modifying them, discarding them, and so on--a picture which differs radically from the traditional picture of a child whose learning is governed by variables such as frequency, recency, and reinforcement.

The methodological implications of this new picture can best be understood by comparing earlier with recent studies of child language. For many long years this was a dreary sub-field of developmental psychology consisting of word counts, phoneme counts, counts of sentence types, and the like--all classified on the basis of age. Since the children's words were classed in terms of their part-of-speech membership in adult English, most of these careful and tedious studies (especially tedious--since they were carried out before the days of the computer) are impossible to interpret, because the important question is not what part of speech a word is in the adult language, but what role it plays in the child's language system. It seems clear to us now that children form a variety of word categories of their own--based on the functions of words in their own language systems--and so words must be looked at in the light of the *child's* total system, rather than in terms of the adult system, which he has not yet mastered. Of course, I am talking now about the very earliest stages of language development; nearly all the work which has been done so far has focused on the development of grammar between ages one-and-a-half and three-and-a-half, and this is the work I would like to discuss in some detail here.

Let us begin with two-word utterances, at about 18 months or so of age, since this is the earliest level of development at which it is possible to begin speaking of grammar. Several investigators have dealt with this level (Braine, Brown et al., Ervin & Miller), and since our results have been remarkably similar, let me lump them together into a discussion of one generic, typical two-word-utterance child, whom we can call Adam. Let us look at Adam's speech and see if we can detect any regularities at this early level.

In the first month that he uttered a two-word utterance he said 14 different word combinations. This number continues to rise gradually until about six months later, when there is a sudden upsurge. The cumulative number of different word combinations recorded in successive months for this typical boy, Adam, was 14, 24, 54, 89, 350, 1400, 2500.

Now the task of figuring out if Adam has a grammar--if there is any sort of underlying regularity to his two-word utterances--is the same sort of thing a linguist does for any language. The problem is to find privileges of occurrence of words--to see if there is any basis for grouping words into categories--and to see if there are any rules for combining these word categories into larger utterances. But the linguist working with native informants can rely on them to help--he can ask them if an utterance is acceptable or not in their language. This cannot be done with the little children--the question would make no sense to them. And so the task of grammar-writing here is much more difficult. It is, in many respects, similar to the task of writing a grammar for a dead language, where all we have is a collection of written texts and no native informants. We must seek out regularities in the tests, and hope that our analysis is a good one.

When we look at Adam's early utterances, two classes of words seem to be evident. There is a small class which we can call pivot words, and a large class which we can call the open class. (Here I am using the terminology of the psycholinguist Martin Braine.) The pivot class is closed; the open class is not. What do I mean? For example, Adam said the following things: "bandage on," "blanket on," "fix on," "take on," and many other sentences of this type. The word "on" is a sort of pivot here--it is always in second position, and a large collection of words can be attached to it. Adam also said things like: "allgone show," "allgone vitamins," "allgone outside," and "allgone pacifier." Here we can say that there is a pivot in first position--"allgone"--which is followed by a large collection of words in Adam's speech.

On distributional grounds, then, it seems that one of the classes is small and contains words of high frequency in the child's speech. The membership of this class is stable and fairly fixed--these words can be called pivots because other words can be attached to them. They may be the first or the second member of two-word sentences--but whichever they are, their position is fixed. The other class is large, open, and contains all the words not in the pivot class. All of these words--the ones that can be attached to pivots--also occur as single-word utterances; but some of the pivots never do.

This pattern is similar to the distinction between content words and function words in adult speech. Linguists speak of classes of content words--like nouns and verbs--which are large and open; and also of many small, closed classes of frequently occurring words--like articles and prepositions--which are called *function* words. In adult terms, then, we can say that the pivot class in Adam's speech corresponds to the role of function words in adult speech; the open class corresponds to the adult's content words. But note--and this is important--this analogy is not in terms of the membership of Adam's words in adult part-of-speech categories. Adult content words *and* function words can be in *either* the pivot or open classes in Adam's speech. The basis of grouping words into classes in his grammar lies in the way the words are distributed: a few pivot words are the context for many open-class words, just as a few function words are the context for many content words in adult speech.

Here is an example from Adam when he was two:

$$\left\{\begin{array}{lll} \text{bandage} & \text{came} & \text{that} \\ \text{blanket} & \text{fall} & \text{then} \\ \text{button} & \text{fix} & \text{this} \\ \text{diaper} & \text{take} & \\ \ldots & \ldots & \end{array}\right\} \left\{\begin{array}{l} \text{on} \\ \text{off} \end{array}\right\}$$

We call the first class the open class; the second the pivot class. Note how meaningless it would be to do an old-fashioned word count here. We would say that the child has nouns and verbs and demonstratives and prepositions, and so on. But in reality--*from the standpoint of his own speech system*--he has only two classes of words, the two classes we have described as pivot class and open class.

If we want to analyze these classes further, we find that there are two sorts of pivots--those that occur in first position--call them P_1--and those that occur in second position--P_2. In the first example I gave, "on" would be a P_2, since Adam said things like "bandage on," and "blanket on," but never said "on blanket" and "on bandage." "Allgone" would be P_1, since he said things like "allgone show," "allgone pacifier," and so on.

It is very easy to summarize Adam's language at this time. This is what the summary would say:

> There are two word classes--a pivot class, and an open class of words which can be called the X-class. The pivot class has few members in comparison with the X-class. Each pivot is used in combination with a number of X-words in two-word sentences, and its position in such sentences is fixed. There are thus two sub-classes of pivot words: P_1, occurring in first position, and P_2 in final position. The X-class is open, and contains all the rest of the child's vocabulary. Each X-word appears in a small number of two-word sentence, and, at this stage, can appear in either first or last position in such sentences. X-words occur either alone or in the position complementary to that of the pivot word.

Now we can take this summary and treat it as a grammar--as a set of rules which can generate sentences in Adam's language at its earliest, two-word stage. This grammar would simply have a list of X-words, P_1-words, and P_2-words, and would combine them according to the two rules:

(1) $P_1 + X$ is a sentence.
(2) $X + P_2$ is a sentence.

What if we take this grammar and try to produce sentences with it? One objection which could be raised is that this grammar assumes that any pivot can occur with any X-word, and that this would allow Adam to say many things which do not sound as if they could have been derived from standard English. But if you listen to Adam you will hear such expressions. For example, he has said: "more wet," "allgone sticky" (after washing his hands), "allgone outside" (said when the door was shut, apparently meaning "the outside is all gone"), "other fix" (= fix the other one), "more page" (=don't stop reading), "this do" (= do this), "more car" (= drive around some more), and so on.

Objections to writing this sort of grammar are sometimes based on the idea that what the child says is an imitation--perhaps a reduced imitation, or a delayed imitation--of what he has heard adults say around him. But it is quite unlikely that Adam ever heard utterances such as these. It is clear that the strangeness of an utterance to an adult is not a criterion of its grammaticality at this stage of development--it does not tell us if it is consistent with the child's grammar. It seems that, using the limited tools he has, the child is already trying to express himself in his own way, producing novel utterances within his system. He seems to have a grammatical system of his own, which is, of course, based on what he has heard, but which is also not a direct reflection of sentences he could have imitated from adult speech.

I'm sorry I don't have time to show you what happens next in the development of Adam's syntax--the story is a fascinating one--but I went into this example in detail for the methodological and theoretical points it makes. I only want to point out one more interesting finding about these pivotal constructions. It seems that when a new pivot appears the child will practice it intensively for several days. For example, when Adam began to use "see" as a P_1, he spent most of his time for a few days saying things like "see hat," "see sock," "see horsie," "see boy," and so on. It seems that the child is actively practicing such new constructions and trying out how far they can go. Play is a very important part of learning (see Slobin 1964a). Children are even heard to go through this sort of linguistic drill when lying alone in bed, before falling asleep (Weir, 1963). It seems clear that the child is not just imitating adult models--he is playing with his language; he seems to be creating it, developing it, building it up by himself.

In the time I have left, let me skip ahead to a much later stage and tell you a little about the development of inflections--specifically of the growth of past tense marking of verbs, because I think this example is also a very instructive one.

It is well-known that children regularize the past tense of strong verbs--"comed," "breaked," "goed," "doed," and so on. (This is, by the way, in itself a sort of evidence for the child's forming of rules--he could never have heard these forms, and so he could not have learned them through imitation, yet they are clearly a regularization of a grammatical rule.) This tendency to regularize continues well into elementary school for some children.

Now, from a traditional psychological point of view, we would expect to find that children begin by using some weak forms correctly--like "walked," and "helped," and so on--and that they extended--overextended this rule to the strong verbs. The real story, however, is much more interesting. In all of the cases we have studied (and these are children of homes where standard English is spoken, and are usually first-born children) the first past tenses used are the correct forms of strong verbs--"came," "broke," "went," and so on. Apparently these strong verbs in the past tense--which are the most frequent past tense forms in adult speech--are learned as separate vocabulary items at a very early age.

Then, as soon as the child learns only one or two regular past tense forms of weak verbs--like "helped" and "walked"--he replaces the correct strong past tense forms with their incorrect overgeneralizations from the regular forms. Thus children actually say "it came off," "it broke," and "he did it," before they say "it comed off," "it breaked," and "he doed it." As my colleague David McNeill has aptly pointed out: "Regularization is thus a mark of sophistication."

This is very puzzling from the point of view of the psychology of learning. The correct strong forms were already learned, practiced, reinforced. Then suddenly the child begins saying things like "goed"-- which could not be imitations, since he has never heard this form from his parents, and which are certainly not reinforced by his parents--yet these overgeneralizations persist, sometimes for years. Let me emphasize that this is true of first-born children of intellectual, middle-class homes, who do not hear these incorrect overgeneralizations.

The crucial point here is that the strong verbs, though they are frequent, are each unique--they do not follow a pattern, and evidently it is a pattern that children are sensitive to. As soon as they find one, they try to apply it as broadly as possible, producing words which are regular, but which they have never heard spoken before. One is left very impressed with the child's great propensity to generalize, to analogize, to look for regularities--in short, to seek and create order in his language. In Piaget's terms, one is fascinated by the child's "autogenic behavior"--the behavior which flows from his own attempts to organize the world. (Incidentally, I have found exactly the same sort of phenomenon in reading recent Russian studies of child language development.)

Again, evidence like this has led psycholinguists in recent years to speak of the formation of rules; so let me conclude with a few words about this notion of rules.

You will remember that I have argued that the great productivity of human language--the ability to produce and understand endless novel sentences--impels us to speak of the formation of grammatical rules, rather than the learning of large numbers of specific word combinations. But this notion of rule is rather tricky, and can easily be misunderstood. What sorts of evidence are there to enable us to speak of a person's possession of a rule of behavior--linguistic or otherwise?[3]

I think there are various levels of evidence, from less stringent, to more stringent. The simplest sort of evidence comes from our analysis of the spontaneous speech of the child. Take, for example, the elementary case of two-word utterances. Already regularities can be detected, since not all possible combinations of units occur. This is the earliest sort of evidence for rules--regularities of behavior.

A more stringent test for the existence of rules is to look for the extension of regularities to new instances. We have such evidence in the spontaneous speech of the child when the child says things like "it breaked," or "two mouses."

But there are even more stringent tests--or definitions--of a rule. On the next level one can ask if the child can detect deviations from regularity--if he can judge if a given construction is right or wrong. This normative sense of rules is a later development in ontogenesis. This is what is referred to as a "sense of grammaticality." Actually, there are several levels of evidence here. The first comes, again, from spontaneous speech. If a child stops and corrects himself, then this is evidence that he is comparing his speech with some standard of correctness--he is monitoring it in regard to his rules. Three-year-olds are frequently heard to stop and correct themselves while speaking.

A more difficult test of this sense of grammaticality is to see if the child can detect ungrammaticalness in the speech of others. At some point, children usually begin to correct each other (and their parents).

The most difficult test of grammatical judgment is the direct question. The child can be asked it if is, for example, better, or more correct, to say "two mouses" or "two mice."

So far, then, we have the following evidence for rules. We can be fairly sure that a child has some rule system if his production is regular, if he extends these regularities to new instances, and if he can detect deviations from regularity in his own speech and the speech of others. This is generally what psycholinguists mean when they speak of the child's learning, or forming, or possession of linguistic rules.

But I think you can see that I have left our the most stringent test for the existence of rules--the one that we adults always look for--namely: Can the individual state the explicit rule? And, using this as evidence of rules, of course, most of us would fail the test. Since no complete and adequate grammar of English has been written, then, using this criterion, none of us knows the rules of English. We can follow them and use them, but we can state them only rarely, and with uncertainty. Many people think that when we speak of the child's knowledge of the rules of his language, we mean rules in this sense of explicit statement. If this were the case, of course, it would be absurd to say that the child ever really learns or forms rules in the conscious sense.

(It is interesting, by the way, that after the child has mastered his language, he does show an interest in explicit rules. It is well-known that children of about six or seven constantly ask metalinguistic questions--that is to say, they ask questions about language. Once they have learned to speak correctly, they generally want to know why, and ask why things are said one way rather than another. At this stage, also, they seem to enjoy playing with rules--breaking and changing them for pleasure--as if they enjoyed their mastery of the rules. So, in a certain sense, the final stage of rule knowledge in childhood is connected with a search for explicit formulations of the rules, and an attempt to exercise full mastery over them.)

In the short time I have had here I have tried to give you some feeling for what is, to me, a "New Look" in the study of child language. Studies of this sort have not been going on for long; we still have much to learn. What we have learned already is that language learning is a much more active and creative process than most psychologists have thought--that the child does more than simply imitate his parents and wait for their reinforcements to "zero him in" on his path toward standard adult language--and that therefore psychological theory will have to increase in complexity and subtlety in order to account for the complexity and subtlety of language learning behavior in a human being as young as two years of age.

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Footnotes

1. The bibliography lists most of the main written sources of information about the theory, methods, and findings of the outlook described here.

2. Actually, of course, the rules of language are social conventions like many other rule systems, such as etiquette, for example; and I think that what we have to say about rules here applies, in general sense, to other regular social behaviors as well as to linguistic behavior. The fact that linguistic rules are also cultural norms makes an explanation of this sort of regular behavioral regularities studied by psychologists in artificial laboratory situations--like, for example, the serial position effect in recall, which says that if you memorize a list of words it will generally be harder for you to learn the words in the middle of the list than those at the beginning and end.

X

"EXPRESSIVE BEHAVIOR" IN MUSIC

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In the attempt to gather my thoughts quickly on this subject, it occurred to me to consult Webster for a definition of the verb "to express." After all, one uses the word freely in talking about music. What is it really supposed to mean? The pertinent parts of Webster's definition are as follows: "To make known, to state." The word "express" belongs also to a group of words meaning "to let out what one feels or thinks." The word itself specifically "suggests an impulse to reveal in any way, as in words, in gestures, in what one makes or produces."

Making known, letting out, revealing: all this implies that music, or any art, is some kind of vehicle by which ideas and feelings can be transmitted from one person to another. Like language, it has to be conceived as a system of symbols. Presumably different kinds of systems are appropriate to different kinds of thoughts or feelings. In other words: there are some things that only music can say.

Thus it seems evident at the outset that any serious study of expressiveness in music would necessarily involve a study of what music can and cannot say. But we must not omit to mention at this point that the very existence of expressive power in music is disputed. There are some who argue that a piece of music is an arrangement of sounds whose beauty is self-contained: that music is simply itself; that it does not represent or express anything outside itself. If I were to subscribe to this belief, I would then be forced to say that the term "expressive" has no application to music. I am not a trained aesthetician, but a composer; therefore my position on this issue arises from whatever intuitive insights I have been able to gain through experience, and also undoubtedly from my personal predilections. I feel that in music, perhaps more than in any other art, the roles of formal beauty and expressive symbolism are inextricably intertwined.

In music there are two categories of creative activity: performance and composition. I am going to try to treat them together for the remainder of this brief set of observations. But I should begin by saying that, of course, composition is the fundamental area of musical creativity. But performance also requires a high degree of creativity, as does any interpretive art; since the performer, by his selections from among countless possible decisions as to how to play or sing a given piece of music, ends up not only by transmitting the composer's intent, but by putting a good deal of himself into the process. An experienced composer, on the other hand, will realize the indispensable role of the performer in the total finished product, and if he is wise, will not attempt to dictate too closely the exact method of procedure at each moment, but will, rather, limit himself to those directions and instructions which will help the performer to realize his own artistic aspirations within the framework of the composition. This is not to say that anything is to be left to chance or whim (there are many people who are now exploring this possibility). To my mind, a vast gulf separates human sensibilities from the throwing of dice.

It seems to me that there are two requirements for creativity in an individual: aptitude and vision. By aptitude I mean all those things for which fairly accurate measurements can be devised, such as a good pitch sense (the ability to "carry a tune"), the ability to remember and reproduce with accuracy melodic and rhythmic patterns dictated to another person, the muscular control and coordination necessary to sing or play an instrument, etc. Under the heading of aptitude should also come those higher skills which are based on those just mentioned: the ability to do well in harmony or counterpoint, or to acquire a smooth and convincing baton technique, or to learn rapidly certain classical methods of performance--for example, the ability to make a Chopin rubato sound different from the kind one would use in Mozart. These skills can be acquired by an apt student from a good teacher: they involve alertness and a predisposition toward understanding musical nuance and rhetoric. The apt student may not necessarily be able to tell you why or how he does what he does. I remember that my piano teacher had two instruments in his studio, and that my lessons were often conducted without any interchange of words between us. In composition, a student can likewise imitate classical models quite expertly and tastefully. In fact it is my conviction that he should be made to do so as part of his training. My point here is that these things can be taught and learned. I have finally decided that my harmony students can be divided into three categories: the mediocre students, the good students, and the interesting students. The good students are the ones who get the best grades. The majority of them are girls. The interesting students are divided about equally between girls and boys. Some of them habitually get good grades, some do not. Some have better "ears" than others. From amongst this group come the potential composers. Even this group, however, yields a low percentage. The ones with the poorer ears fall by the wayside. The next to go are those who are essentially lazy and lacking in self-discipline. (People are often interesting because it's easier to be interesting that to master fundamentals.) And finally, there are those who simply have nothing to say.

This bring me to my second requirement for creativity: vision. By vision I mean all the things for which accurate measurements have not been devised. An individual with vision is one who sees the world in his own way. Vision cannot be taught, but only acquired painfully through experience. But through the refinement of the techniques that can be taught, a composer or performer's vision can be sharpened, deepened, and finally communicated. In fact, it is here that the inextricability of form and expression comes in. Which is first, the chicken or the egg? An artist thinks in terms of his materials. Musicians think in musical, not verbal terms when they are exercising their gifts as musicians. In order even to think in these terms, a musician must have the necessary control over these materials. Therefore a musician cannot have a unique vision without a technique. Yet the goal of acquiring a technique is to "express" one's inner vision! Therefore this vision must pre-exist, at least in embryonic form. I know of no way in which it can be discovered, however, until the individual has acquired the basic means of communication.

The problem is made ever more subtle when we consider that the way an artist thinks is much conditioned by the historical circumstances in which he finds himself. These circumstances influence not only his political, religious, or moral views of life, but his views toward the technique and meaning of his own art. The composer or performer inherits a tradition. To the extent of his vision, he changes this tradition in some way: he leaves the imprint of his personality on it in such a way that it will never be quite the same. The greater the artist, the deeper the imprint. Some artists in some times feel a compelling necessity to revolutionize the language of their art--not out of a desire for sensationalism, but because their vision demands it (possibly because history demands it). Other artists in the same or different times leave an equally overpowering impression on their art simply by refinement, selection, re-moulding. There are revolutionary personalities and revolutionary times, there are evolutionary personalities and times. The same time can have aspects of both; the same person can too. The great artist is one who can convince us that he is the right man at the right time, whatever anyone else may say then or now.

How do we pick such people out of a crowd of students? Should we exercise our ability to do so, even if we possessed it? Sometimes the best teacher for the artist is the school of adversity, of public indifference. Sometimes, on the other hand, all that is needed to bring out the latent artist in a person is opportunity and money. Teaching is a wasteful but necessary process. What must never be lost is the personal equation between teacher and student.

XI

TRAINING FOR CREATIVE THINKING: A CASE OF AN ICEBERG?[1]

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In this paper, the writer would present some impressions and comments which came to his mind while scanning current literature on training for creativity or originality. A couple of able reviews on this topic have already been published (e.g., Gallagher, 1964; McDonald, 1964; Maltzman, 1960), but there seems to remain some room for late arrivals and lost-on-the-ways.

In more than one sense, the subject, "training for creative thinking," reminds the writer of an iceberg. First of all, an iceberg survives only in a cold environment and this somewhat resembles the current psychological and educational climate surrounding the topic of creative thinking. Now, it is true that some people believe in a "creativity boom" and it is also true that at least one noted colleague pronounced that "Creativity is the latest fashion in American educational psychology" (Vernon, 1964, p. 163). But it seems more exact to diagnose the situation as Torrance did in one of his recent remarks: "It is not difficult, ..., to experience the illusion ... that we _are_ having a creativity boom in education. It seems to me, however, that it is very much like feeling that we are having a heat wave in Minnesota when the mercury rises to zero degrees after two weeks of hovering around 20 and 30 degrees below zero" (Torrance, 1964a, p. 1).

If such is the case, let us indeed exert more, not less, concerted efforts to bring a real spring to the scene. At the same time, however, let us keep it in mind that the earth has to travel a certain distance before it can enjoy the heat from the sun and also that a cure for frostbite is not in applying a red hot iron directly onto the locale of the damage. In either case, a steady progress is the cardinal principle of improvement, not an impulsive, short-lived reaction.

Training - Of What? For What?

Second, an iceberg is an elusive object easier to discuss than to observe. Possible for this reason, a notable lack of conceptual clarity is seen with regard to the very basic question, "What are we training?" or "What precisely is it which we are supposed to be manipulating or influencing through our training procedures?" Without answering this question at the outset, investigators tend to run their training sessions first and to interpret the results _ex post facto_ to suit their imagination.

In any training (teaching and learning) sessions, a crucial requisite is to specify "what is practiced and reinforced, how and to what extent" (Kersh and Wittrock, 1962, p. 463) but this point seems seldom clarified in creativity training studies. Some investigators obviously believe that they are affecting creative "abilities" by their training methods and, thus, we read such statements as, "we interpret these results as demonstrating a lasting effect on certain types of creative ability produced by the creative problem-solving course" (Parnes & Meadow, 1963, p. 315) and, more dramatically, "94% improvement in ability to think up good ideas" (Osborn, 1957, p. viii). Maybe so, but, then, it would not be totally wasteful to recall the long and hard path our research on intelligence has trodden within the past half century. If we are indeed talking about the development of abilities, let us by all means pay our attention to the fact that three aspects of this subject, namely, the hypothetical true potential, its approximation through measurement, and the effective manifestation of the ability in life situations, are to be clearly distinguished in our discussion (Anderson, 1960).

Let us also recall the fact that there seems to be no broad, over-all creativity factor corresponding to the general, abstract intelligence (Thorndike, 1963a; Thorndike, 1963b) and, hence, the fact that "an adequate domain measure, which clearly brings out this general characteristic relatively unencumbered by variance due to error or to specific factors, will be hard to come by" (Thorndike, 1963b, p. 54). It would be vainglory to discuss the effects of training on creative abilities before we develop valid measures and before we identify what specific conditions are affecting which specific aspects of measured abilities. Construction of such adequate measures will be all the more difficult if the definition of creativity involves the social criterion of usefulness, effectiveness, or practicality (Maltzman, 1960; Mednick, 1962; Parnes, 1964), in addition to the statistical criterion of infrequency which is deemed sufficient to define originality.

Finally, let us remember that any treatment of creative "abilities" in isolation from a larger conceptual scheme of human aptitudes and their development would be of little significance. If we are going to repeat all the mistakes committed earlier in the research on intellective and cognitive development (Cureton, 1964; McNemar, 1964) and if we are not willing to learn from the hard-fought integrative perspectives such as those of Piaget's (Hunt, 1961), we will indeed be wasting much time, energy, and resources on trivials.

There are, on the other hand, those who believe that training develops "skills" in problem-solving and it does not have to deal directly with the basic abilities. The viewpoint here is essentially that original behavior (not necessarily creative) can be brought forth by the process of re-arrangement of a pre-existing associative hierarchy (Maltzman, 1960; Mednick, 1962; Staats & Staats, 1963). Such interpretation of unusual or novel behavior as a new combination between old patterns of stimulus and response has the advantage of identifying specific variables in the teaching-learning process to an extent much larger than that found in the previous "ability" approach and also of tying the conceptualization and execution of training studies into some explicit system of S-R formulations.

This skill-training approach tends to oviate the question of "what of," but it in turn faces the crucial question of "what for" of training. Unless such training procedures are shown to result in facilitation in the acquisition and retention of educational and vocational skills and knowledge and/or in improvement in the performance of socially useful acts, they will remain in the same category as that of the "test variables" (Travers, 1963, p. 420) in aptitude measurement, predictive of performance in a test situation but of little use anywhere else. However, proof of functional validities and non-specific transfer would not be too easy to establish in view of the generally restricted and qualified results by several investigatory (Anderson & Anderson, 1963; Birch & Rabinowitz, 1951; Caron, Unger, & Parloff, 1963; Hyman, 1964; Maltzman, Simon, Raskin, & Licht, 1960; Parnes, 1964; Rosenbaum, Arenson, & Panman, 1964).

The Invisible Part

An iceberg is a big mass two thirds of which is not even visible, and that is about the picture of our current knowledge of training for creativity. There are simply too many questions left unanswered to allow us to describe the iceberg in its entirety unless, of course, we are satisfied to call it "a mere chunk of ice" and to forget about it.

One thing seems to be rather certain: no simple formulation of any training procedures and their effects is possible without leading us into gross misunderstanding. For example, there are indications that the type of tasks or materials employed in the training process has much to do with the immediate results and their transfer (Hyman, 1964; Kersh, 1962; Maltzman, 1960). In fact, there are times when training on some tasks backfires and leads to negative transfer to other tasks (Birch & Rabinowitz, 1951; Duncker, 1945; Hyman, 1961; Hyman, 1964; Kersh, 1962). Obviously, then, a far more meticuluous and systematic examination of the conditions of training is necessary before any generalization is to be made.

There is also some evidence that instructions given represent an important variable in training (Cartledge & Krauser, 1963; Gerlach, Schutz, Baker & Mazer, 1964; Torrance, 1961) and that this variable might elicit the same or similar results in independence of or in interaction with another variable, practice (Maltzman, Bogartz, & Breger, 1958; Rosenbaum, Arenson, & Panman, 1964). There are also indications that subjects' attitudes, mental sets, and orientation affect the results of training (Hyman, 1964; Torrance & Harmon, 1961). These observations raise many questions, one being the role of verbal or symbolic communication systems in creative thoughts and acts. It seems of special interest to study their contribution in older children's and adult's creative behavior, based upon manipulation of materials of non-verbal nature, in contrast to that in children's prelinguistic behavior.

Another question here concerns the unidentified effects of experimenter outcome orientation (Rosenthal, 1963), demand characteristics (Orne, 1962), Hawthorne effects (Cook, 1962), and other similar social psychological variables. It would seem that studies on training for creativity are especially vulnerable to these confounding effects, particularly when volunteers are used as subjects and enthusiastic psychologists and teachers serve as the trainers and experimenters. Faith might indeed move a mountain but, then the training per se should not be credited with the feat!

The seeming importance of deep involvement with a certain degree of freedom, or what Henle called "immersion" and "detached devotion" (Henle, 1962), in creative thinking is well recognized. In addition, it has been pointed out that actual creative process tends to involve a long time perspective. In other words, a creative output appears to be a result of "deep concern with a problem over a period of time on the part of an able person" (Anderson, 1960, p. 19).

In spite of these observations, not much attention has been paid to these aspects of the problem among current studies on creativity training. Most training sessions are one-shot businesses, seldom without a strong aroma of a laboratory "game" played with abstract and trivial problems. Even when training is given over a couple of months, as in the "creative problem-solving" institutes or courses (Osborn, 1957), the participants would seem to come because they want to "be creative," and not because they have problems with which they have been struggling over months or years, problems in which they are deeply involved as problem-solvers. Further, analysis of the persistence of training effects, even when such are made, tend to cover rather brief spans such as one hour, two days (Maltzman, Simon, Raskin, & Licht, 1960), three days, two weeks and six weeks (Kersh, 1962), and eight months (Parnes & Meadow, 1960), with the respective and specific tasks and often without control for the intervening activities.

The time element, briefly mentioned also by Hyman (1964), sheds further interesting light on a couple of studies on the effects of "extended effort in idea production" (Parnes, 1964, p. 150). The actual time span covered in these extended trials happened to be three minutes, five minutes, twelve minutes, fifteen minutes, and the like (Christensen, Guilford, & Wilson, 1957; Parnes, 1964), and these experimental time spans tended further to be divided into halves or thirds to trace idea production curves over time. Along with many other items in our life, ideation, too, seems to be becoming "instant"!

There is a group of studies which deserve a brief mention here. They deal with the question of possible facilitation of creative ideation by group participation. The idea of "social facilitation" in brainstorming was presented by Osborn (1957), but Taylor, Berry, and Block (1958) presented negative evidence, pointing out that group participation when using brainstorming seems to inhibit rather than facilitate creative thinking.

Parnes and Meadow (1963), somehow interpreting the key problem to be a comparison between performance of actual groups, employing a certain brainstorming principle, with that of nominal groups (individuals working independently) employing "conventional thinking procedures," reported that the former (brainstorming group) out-performed the latter (conventional individuals). In the same paper, however, these authors reported the results of a more crucial comparison between performances of actual brainstorming groups with that of nominal brainstorming groups. To quote: "The results of our experiment indicated no significant differences between the actual groups and the nominal groups. As a matter of fact, in contrast to Taylor's findings, the tendency was in favor of the actual groups using the principle of deferred judgment in open discussion" (Parnes & Meadow, 1963, p. 318). This does not appear to be a convincing argument in response to the question raised by Taylor and his associates with regard to the comparative merit of brainstorming in a group vs. brainstorming alone (in other words, the effects of group participation per se when using the brainstorming procedures).

The burden of proof seems to remain upon the group brainstorming workers, especially in view of the two more recent reports (Banghart & Spraker, 1963; Dunnett, Campbell, & Jaastad, 1963) both of which presented results nonsupportive of the "social facilitation" claims.

Finally, let us look at classroom teaching and learning. It is still a truism that our formal education does not match the full range of individual differences brought to it by students and it seems certain that "different kinds of children learn best when given opportunities to learn in ways best suited to their motivations and abilities" (Torrance, 1964b, p. 1). Hence, the urgent and persistent need for re-examination of our current procedures and for innovation in educational practices. In this context, it is encouraging to see many people committing themselves to "newer" and "better" things in curriculum and instruction including, I gather, various discovery-type methods and materials, permissive or "student-centered" teaching and auto-instructional gadgets and programs.

However, extremism in any direction seems unwarranted and surely premature. Let us take an example from studies on learning by discovery and inquiry training (Bruner, 1961; Suchman, 1961). In spite of the fact that "'Learning by discovery' is so frequently recommended to educators that it has reached the status of a slogan" (Cronbach, 1963, p. 378), thoughtful remarks by workers themselves tend to warn us against any rash conclusion. A few quotations are presented below.

"The data from this present experiment does not support the generalization that learning by a process which involves discovery is necessarily superior to learning by more highly directed processes. Indeed, these data suggest that under certain conditions of learning, highly formalized 'lecture drill' techniques, ordinarily considered sterile and meaningless, produce better results than techniques which attempt to develop 'understanding'" (Kersh, 1962, p. 69); "Under appropriate conditions of practice and reinforcement, the discovery technique will foster favorable attitudes and interests" (Kersh & Wittrock, 1962, p. 467); "Consistent throughout the recent research, as interpreted above, is evidence that the discovery method is effective for what it requires the learner to do and for what is reinforced during learning" (Kersh & Wittrock, 1962, p. 467); and "When the criterion is initial learning of a few responses, explicit and detailed direction seems to be most effective and efficient. When the criteria are retention and transfer, some intermediate amount of direction seems to produce the best results" (Wittrock, 1963, p. 189).

Highly relevant here, at least from the writer's viewpoint, are the interesting results reported by Fiedler (1962; in press) on his group leadership, group climate, and group productivity studies. In his "contingency model" of leadership effectiveness, Fiedler (in press) suggests that directive, managerial, active leaders perform best under either favorable conditions (good leader-member relations; structured, unambiguous tasks; and strong position power) or unfavorable conditions (poor relations; unstructured, ambiguous tasks; and weak position power), while permissive, considerate, non-directive leaders tend to perform well within intermediate ranges of these variables. Implications of such findings are many, especially among classrooms in elementary grades where a teacher takes on a formal leadership role. Much as we want a concise golden rule on teaching-learning to be propagated among psychologists and educators, the reality would seem to militate against such a neat simplicity.

Remember the Titanic!

Voyage amidst an iceberg is fraught with danger, even when the ship is equipped with a radar and a sonar. Let us not forget this fact when we discuss our iceberg, training for creative thinking.

In a recent article, Joncich (1964) pointed out the culture-and-time-bound nature of our concept of creativity. She timely urged educational researchers not to lose sight of the ever-glittering ideal of a mobile, restless. risk-taking, dreaming, and future-oriented individualist, now wearing a "scientific" coat, instead of an explorer's buckskin dress, to suit the pragmatic, active, and anxious society of modern, industrialized America.

The writer elsewhere argued for a thorough re-examination of the basic societal values as an urgent pre-requisite for any meaningful revision or "improvement" of educational materials and practices (Yamamoto, 1963). He will not elaborate on this, simply because other participants of this symposium are expected to deal with this fundamental problem. In a nutshell, and as being put by one of the writer's colleagues, the question is, "Do we dare train our children for creativity?"

Let us always remember the disaster which hit the "unsinkable" Titanic 53 years ago. Not many of us rank anywhere near the colorful character, Molly Brown - someone must be watching for icebergs!

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Footnotes

1. Paper also read at Amer. Educ. Res. Assoc., Chicago, February, 1965.

XII

GROWTH AND DEVELOPMENT OF EXPRESSIVE ABILITY IN THEATRE

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Every child brings drama with him when he comes to school. His enjoyment of imitation and make-believe has been with him practically from birth. Dramatic interpretation is his way of accumulating knowledge.

> "The child of three, four, or five cannot discover what it feels like to be a mother except by going through the motions of mothering, and the son of a truck driver feels closer to his father by pretending to drive a truck."[1]

The child interprets the world around him in terms he can understand so that he can fit into the life (society) in which he is a part. By playing out countless adult activities alone, with friends or imaginary playmates - he explores and puts his new information to work.

Then comes school - kindergarten -

> "which in former days brought an abrupt end to this wonderful source of fun and learning. Drama came in the door with the child, but it was not allowed to stay. Here was the kind of play which was the prelude to a great art - the child's first art - and it was ignored in school"[2]

The reason, Miss Ward goes on to point out, was that the only drama teachers knew was the formal play, the memorized recitations (repeated without feeling) for "special occasions" or "last day" exercises.[3] When motivation became important, plays were written to motivate the learning of facts: plays written on all subjects to make them palatable. For example, one particularly revolting play took place inside "Mary's tummy" where the globs of food (in crepe paper costumes!) dropped in and were digested by "Stomach juices (also in crepe paper costumes!) Such prostitution of drama, using it as a "cart horse" to help teach almost every subject in the curriculum, is far removed from spontaneous, uninhibited, creative play that comes naturally to youngsters.

Fortunately, education recognizing the development of individual powers, allowed for the development of creative dramatics (also called creative drama or playmaking), which is based on free informal play guided, but never directed, into an orderly process by an imaginative teacher or leader. This is informal drama created by the group of children, played with spontaneous action and dialogue and action, never written down in a form to be memorized.

Creative dramatics may be based on an idea, an historical event, and experience - but the core, especially for ten year olds and older, is story dramatization. Careful selection of stories which gain through being dramatized creatively, stories containing dramatic elements rather than mere factual material, result in playings which should include the essentials of playmaking: action, characterization, dialogue, plot, climax, teamwork, tempo, voice and diction and grouping.

Practitioners who teach creative dramatics have, over a period of thirty years, reached certain conclusions as to the values of creative dramatics to the individual child drawn from observing children in classes and considering the evaluations of teachers, parents, and the participants themselves. These are listed and explained by Eleanor Chase York as: creativity (sensitivity, fluency, flexibility, originality), emotional stability, social cooperation, moral attitudes, physical poise, skill in communicating, and appreciation of drama.[4] Mrs. York states:

> "The precise and objective measurement of specific benefits received by children from participation in this art is a difficult and complex process. At the present time we have very little in the way of exact research to substantiate our beliefs in the values received."[5]

Here we obviously need the help of our friends in the behavioral sciences.

"Creative dramatics" becomes "improvization" for young people in high school. Indeed, this creative approach to drama is believed by many to be the best for seventh and eighth grades - especially if the young people have had such experiences in the lower grades upon which they can build. For example:

> "In an eighth - grade elective dramatics course in the Evanston, Illinois school system (which has a dramatic department with a supervisor and trained specialists), the students are introduced to the plays of Shakespeare by the dramatizing of episodes from the stories of several of the plays. Using Shakespeare in this way introduces children to the plays in a way they were intended to reach the people - by experiencing them on the stage, not in English classes. When young people know the stories of the plays and become acquainted with the characters, they enjoy and profit greatly from playing them in their own words, leaving Shakespeare's difficult language until senior high school."[6]

Improvization continues to be used as an integral aspect of almost all college acting classes, but by senior high school, study and production of formal plays - with emphasis on acting, directing, scenic decor, and sometimes playwriting - is offered in the curriculum, co-curricularly, or most often, unfortunately, extra-curricularly.

The problems needing study in the secondary school dramatics programs are manifold. One of the earliest studies was made by Dina Rees Evans during 1930-1932 at Cleveland Heights High School, which included observation and psychological measurement of 75 pupils, most of whom were "problem cases." The results gave evidence of a trend toward "better social adjustment and more wholesome behavior on the part of those participating in the dramatics class as compared with the members of the English class control group whose behavior patterns grew steadily worse."[7] Although considered somewhat of a landmark at the time, all too few studies have followed (at least that have been published) and there is wide divergency as to whether such values, even if substantiated, should be the goals for secondary education.

An attempt to explore such goals at this point seems irrelevant. In producing the formal play - whether with adults and/or child casts playing for child audiences, adolescent casts playing for secondary school audiences, or college or university casts (undergraduate and/or graduate) playing for the college community audiences - creative behavior is manifest in the acting, directing, and scenic embellishment. How may we develop research to help substantiate creative or expressive behavior in these areas?

Acting

Lee Strasberg in tracing major historical developments in the teaching of acting, finds that the usual approach has been to emphasize bodily expression, to catalog the emotions, to write "a kind of grammar of expression; and an analysis of voice and its production."[8] Hence, most training until the twentieth century was of the mechanical level - emphasizing the response rather than the stimulus. Stanislavski was the one who advocated an approach with emphasis on the stimulus rather than the response, on the creative rather than the technical.[9]

The basic questions "Can acting be taught?;" "Are actors born inherently different from other human beings?;" "What is talent?" are dealt with by Frank Whiting convincingly in his chapter on Acting in his book, Introduction to the Theatre.[10] The term "talent" he indicates is probably synonymous with general effectiveness, and as such, is not objectionable. If however, it is used to imply some mysterious or special gift, "talent" may become little more than a protective escape for the incompetent teacher, who, unable to get results, dismisses the student as "untalented." Talent is probably nothing more mysterious than the total pattern of abilities and aptitudes - of voice, body, personality, past experiences, and a knack for abandoning oneself to the world of make-believe. That is to say, the actor is a total human being, a complex bundle of habits, memories, and attitudes, not just a person with specialized techniques learned in a dramatic school. Whiting further explains:

> "At the opposite extreme from the contention that actors are born, that it is all a matter of talent, lies the equally extreme view that the beginner in acting should consider himself as humble and helpless as the beginner in other arts, such as instrumental music, for example. This view, while useful in motivating a lazy student, is essentially false, for...a beginner can and often does act, and act rather well. Imagine a beginner in violin or piano offering a public concert after practicing a few hours per day for three or four weeks! The difference is not hard to understand. The beginning musician can be assumed to have scarcely touched a violin or piano, whereas the beginning actor has been using his instruments (body and voice), for better or for worse, since the day he was born. Acting, then, is not so much an entirely new skill, as it is a matter of adapting what one already has to a new situation. This has disadvantages as well as advantages. It throws a premium upon the intangible thing called attitude. It requires a delicate adjustment, in that the actor must concentrate most of his attention upon the play - the imaginary situation - at a time when the real social stimulus of success or failure before an audience is enormous. It may be more difficult for the actor to perfect control of his instruments than for the musician to perfect control of his, but in the beginning the actor is far ahead."[11]

Acting then, appears to be neither wholly a matter of inborn talent, nor wholly a matter of learning from the beginning. Whiting concludes that "it can be taught, provided that we think of teaching in the largest sense of that term, as a guiding and controlling of environment."[12]

Directing

The theatrical director, who is the one individual who is responsible for seeing that all of the many aspects of the production work together to create a unified whole, "should combine the qualities of a sensitive and imaginative artist, a skillful and patient teacher, and an efficient and well organized executive."[13] As an artist he must be able to translate from the printed page to the stage the essence of the play. Having decided what the play "has to say," he must visualize the characters, environment and action, carefully planning the latter to contain the elements of graphic composition, and at the same time, have the movement symbolic of the dramatic meaning in the scene. The director as teacher should undoubtedly contain the qualities of enthusiasm, patience, understanding, ability to inspire confidence, and motivate all concerned with the production to convey his concept of the play to the audience.[14] The executive ability of the director must manifest itself in his preliminary planning of the production, the scheduling of tryouts for casting, the scheduling and planning of rehearsals, the supervision and coordination of all of the technical aspects of the production - in other words, he has to be an efficient organizer.

The above qualities are probably essential for a good director, although obviously, all directors will vary in the techniques and systems which work best for themselves.

Scenic Decor

Under this heading we will include the scenic designer, the customer designer, the lighting artist, and the craftsmen who build the scenery, costumes, and properties, and shift the scenery during the production. In many educational theatre productions, all of these responsibilities are under the control of one individual, but in the realm of higher education there are usually individuals responsible for each aspect of the scenic decor of the production.

The scenic artist, of course, is closely akin to the painter and the sculptor; however, the former is faced with many limitations: the physical stage, on which his work must appear, the unification of his work with the other artists (for example, the scenic designer with the costume designer, with the lighting designer - if they happen to be three separate individuals), the distance from which his work must be viewed, the necessity of evolving elements that can shift quickly and yet convey solidity, etc. It would seem that there certainly should be opportunities to utilize the same basic research established for painters in studying the scenic artist, but such would have to be modified in terms of such limitations as those stated above.

Playwriting

The one unequivocal creative artist of the theatre is the playwright. Although much dramatic production utilizes the plays of playwrights no longer living, the theatre cannot thrive without the development of new dramatists. Basic research into creative writing certainly should be applicable to this particular artist, but again there would of necessity be limitations on the form, particularly the unique quality of writing translatable into theatre production - for the dramatic script is not complete, obviously, until it has been received by an audience as an acted, dramatic entity.

It should be pointed out that the college students involved in formal educational theatre productions are also in many instances, involved in classes which lead to major and/or minors in their degree program - some 15,000 such students in 1960. In that same year, graduate instruction in theatre was provided at 176 universities. Among these programs there is great variety, and Hobgood states that "programs of theatre instruction and activity in higher education represent an adaptation of purposes and content to institutional dispensations." These he classifies as recreational, avocational, liberal arts-humanistic, liberal arts-vocational, and pre-professional.[15] It is in the latter two classifications in which there is great need for basic research to determine the most valid type of training for student artists in all areas of the theatre.

Although an attempt has been made in this paper to simplify, the result being perhaps over-simplification, the elements of creative behavior in the arts of the theatre, the very complexity and all-inclusiveness of the art compound the problems of potential basic research. As Hughes Mearns has said:

> "All of the arts combine in the theatre; decor, the dance, impersonation, effective speech, the song, pantomime, projection of personality, the art of supressing self and even ill-will for the sake of unity of effort. Hundreds of other arts could be listed, including the art of living together, and the art of creative imagination."[16]

Footnotes

1. Hartley, Ruth E., Frank, Lawrence K. and Goldenson, Robert M. Understanding Children's Play (New York: Columbia University Press, 1952), p. 28.

2. Ward, Winifred. Drama With and For Children (Washington, D.C.: U.S. Government Printing Office, 1962), p. 2.

3. Ibid.

4. York, Eleanor Chase. "Values to Children from Creative Dramatics," Children's Theatre and Creative Dramatics, edited by Geraldine B. Siks and Hazel B. Dunnington, (University of Washington Press, 1961), pp. 124-131.

5. Ibid.

6. Ward, Drama With and for Children, p. 41.

7. Miss Evans' doctoral study is reported in some detail in the Bulletin of the National Association of Secondary-School Principals for January, 1948.

8. Strasberg, Lee. "Acting and the Training of Actors" in John Gassner, Producing the Play, rev. ed., (the Dryden Press, 1953), pp. 128-163.

9. Stanislavski also realized the importance of the technical; his second book, Building a Character, is based on such. His first book, An Actor Prepares, stressed the creative stimulus as basic to acting.

10. Harper and Brothers, New York, New York, 1959.

11. Ibid. Pp. 110-117.

12. Ibid.

13. Ibid., p. 150

14. Ibid., pp. 154-156.

15. Hobgood, Burnett M. "Theatre in U.S. Higher Education: Emerging Patterns and Problems," Educational Theatre Journal, XVI (May, 1964), pp. 153-155.

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XIII

THE SOCIOLOGY OF THE ARTS: A NEGATIVE MANIFESTO

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Professional sociologists have contributed little to the systematic study of creative behavior. Yet the notion that the art of a period is closely and necessarily allied to the prevalent way of life has been widely discussed and accepted since the mid-nineteenth century. Before that time we find scattered references to the relationship between art and society in the words of Vico, Herder, and Montesquieu. However, only in the nineteenth century with the writings of such social critics as Sait-Simon, Marx, John Ruskin and William Morris does the idea become intellectual currency.[1]

The sociology of art properly began in the context of a broad criticism of life in industrial societies. In our own century some of the more provocative ideas about art and society continue to come from the social critics of the left and right rather than from the professional sociologists. These social critics have been without exception utopian thinkers; they were interested not merely in studying society as a natural, neutral phenomenon; they believed in a certain kind of society. Like utopians of whatever color, the social critics of modern art foresaw the possibility and the absolute necessity of a more unified social order. Thus, when they looked at industrial society, they observed the fact of increased specialization, and separation of human activities, but they tended to interpret the fact as a sign of disunity and fragmentation. They deplored the separation of the emotional and the practical, the separation of the artistic product from the sensibility of the producer, the isolation and irrelevance of the artist in a society where power and money were supreme determinants of value and social position.

Art in Conservative Utopias

Conservative utopian thinkers such as Comte or, more recently, T. S. Eliot have in common a pessimistic conception of human nature and a belief in the necessity of man's subordination to God or some transcendent system of social or religious values. To the conservative mind inequality is in the nature of things and should be expressed socially in a hierarchial ordering of society with a clear distinction between hoi polloi and hoi aristoi, the men of quality and the uncreative masses. The artist is ideally a member of the elite since he is involved in the creation and celebration of the ultimate values which are the unifying fabric of society. From this perspective, modern industrial societies and the artist in these societies are anomic. Anomie means basically a lack of supreme values which could form a bond of communication and control between the fragmented parts of society. The phenomenon of the artist existing and producing as an individual, proclaiming an aesthetic of art for art's sake, is a contradiction of the social nature of man and the moral nature of society.

One of the conservative implications of T. S. Eliot's principle of the "objective correlative" is that the poet as an artist cannot exist as an isolated individual; he needs to relate his personal emotions to some external and objective pattern of values.

In an elucidation of Valéry, Eliot has said that a poet's emotions are not in themselves important.

> "The only way of expressing emotion in art is by finding an objective correlative; in other words a set of objects, a situation, a chain of events which shall be the formula of that particular emotion; such that when the external facts which must terminate in sensory experience are given, the emotion is immediately evoked."[2]

Moreover, it is clear that Eliot wants us to believe that "objective correlates" really exist only in homogeneous societies unified by an elite and by religious values.

The best "objective correlates" flow from the common experiences, values, and language of a homogeneous people in a unified social order. Thus Eliot argues that: emotions and feelings are best expressed in the language of the people; a truly great poet is a social being with a social responsibility.

> "...in a homogeneous people the feelings of the most refined and complex have something in common with those of the most crude and simple...when a civilization is healthy, the great poet will have something to say to his fellow countrymen at every level of education."[3]

From an opposite utopian stand, Marxists have also contrasted the isolated and individualized experience of contemporary artists with the ideal of a social artist who communicates universally. For the Marxist: the artist's "objective correlative," the basis of communication, is not the reified values of a transcendent society hierarchically ordered into elites and masses. Man doesn't create socially when inequality is made legitimate and sacred; the condition for social production is equality. The artist spontaneously creates socially and universally only when he and all men are free and autonomous in their productive activities. The problem of the artist in industrial societies is not the vulgarizing control of masses but the illegitimate control and commodity values of a class. The artist is not anomic, but alienated from his activity and his product in a commodity market which produces according to the standards of a single class, rather than socially and humanly.

The expected result of alienation according to the Marxists is that the artist either flees into a personal world of style and mystification or into social criticism; the result in either case is that the artist stands against both the masses and the dominant institutions of his society.

> "The feature common to all significant artists and writers in the capitalist world is their inability to come to terms with the social reality that surrounds them. All social systems have had their great apologists in art (side by side with their rebels and accusers): only under capitalism has all art above a certain level of mediocrity always been an art of protest, criticism, and revolt...the transformation of all earthly goods into market commodities, the all-embracing utilitarianism, the total commercialization of the world, have provoked such intense repugnance in anyone possessed of an imagination that the imaginative have inevitably found themselves emphatically rejecting the victorious capitalist system."[4]

Utopias are unfashionable today. Professional American sociologists like Daniel Bell and Seymour Lipset[5] have declared the end of utopia. We are told that our society is basically just and moral and that the social revolutions have been won. Utopia has been essentially achieved in the affluent society. However, a little dialogue between Negroes and Whites, between artists and scientists may be necessary as a guide to ironing out the kinks in our existing organizations. From this so-called liberal view of society, we can improve racial conflict by providing our minorities with opportunities to become like us. Applying the new philosophy to art, we can make America a great art center by building more facilities, by expanding education and subsidies. Doubtless, the California Commission on the Arts will recommend precisely that--more real estate, more investment, more money in the context of our existing organizations.

To accept uncritically this philosophy of the end of ideology in this exploratory conference would constrain us to talk only about techniques and means.

Unless we wish to remain apologists, we must raise the unpopular and utopian questions of goals and values. At some point in our discussions we should think as outrageously as possible about what we really want. To think outrageously means to point out discrepancies between values and reality: discrepancies between what we want, what we have, what we will have with all the expected studies and subsidies, and what we could have given our resources and values.

As a sociologist believing in society but lacking artistic talent and sociological data, I propose to contribute to this end by thinking negatively about the creative process. Perhaps only negative and utopian thinking is thinking. We cannot seriously propose a study of creative behavior without having some perspective and some notion of what the problems might be.

In spite of the social evidence to the contrary, I am strongly inclined to view the creative process as a social process. Moreover, I am interested in that aspect of the creative process which today appears the least social--the relationship between the artist and his audience. Herein lies a central problem. Critics have debated endlessly the unpopularity of high art and the growing separation of the artist from a wide, social audience. Few, if any, social scientists have tried to verify the statement and analyze the social conditions of isolation and separation.

Ortega y Gasset clearly and outrageously stated with approval the trend toward unpopular elite art.

> "When we analyze the new style (in painting) we find it contains certain closely connected tendencies. It tends (1) to dehumanize art, (2) to avoid living forms, (3) to see to it that the work of art is nothing but a work of art, (4) to consider art as play and nothing else, (5) to be essentially ironical, (6) to beware of sham and hence to aspire to scrupulous realization, (7) to regard art as a thing of no transcending consequence.[6]

Less a cynic and an elitist, James Baldwin also has pointed out the separation of the artist from society. But he deplores the separation because he feels that art at least should be of transcending importance.

> What the mass culture really reflects (as is the case with a 'serious' play like J.B.) is the American bewilderment in the face of the world we live in. We do not seem to want to know that we are in the world, that we are subject to the same catastrophes, vices, joys, and follies which have baffled and afflicted mankind for ages. And this has everything to do, of course, with what was expected of America: which expectation so generally disappointed, reveals something we do not want to know about the intricacies and inequities of social structure, reveals, in sum, something we do not want to know about ourselves. The American way of life has failed--to make people happier or to make them better. We do not want to admit this, and we do not admit it. We persist in believing that the empty and criminal among our children are the result of some miscalculation in the formula (which can be corrected), that the bottomless and aimless hostility which makes our cities among the most

> dangerous in the world is created, and felt, by a handful of aberrants, that the lack, yawning everywhere in this country, of passionate conviction, of personal authority, proves only our rather appealing tendency to be gregarious and democratic. We are very trapped between what we would like to be, and what we actually are. And we cannot possibly become what we would like to be until we are willing to ask ourselves just why the lives we lead on this continent are mainly so empty, so tame and so ugly.
>
> This is the job of the creative artist--who does not really have much to do with mass culture, no matter how many of us may be interviewed on T.V. Perhaps life is not the black, unutterably beautiful, mysterious, and lonely thing the creative artist tends to think of it as being; but it is certainly not the sunlit playpen in which so many American lose first their identities and then their minds.[7]

I am aware, of course, that the separation of the artist from public and society may be an exaggeration. There has been much talk about "the growing concern" over the arts. We are after all building pavilions to art and music in Los Angeles. Executive suites and Bel Aire mansions are exhibiting pop art. Artists have made T. V. panels. More immediately, some social movement has brought us to this convention. I even suspect that art will become as important as poverty and prestige for the universities. Perhaps aesthetic values and creativity are invading the social order; more likely, the social economic order is invading art. I believe that art will be important to the degree that it can make money and become a commodity for respectable sale and investment. If it does not do that, at least it can decorate our affluent homes and give us status. Moreover, art and creativity can give the less affluent something to do, when the machines no longer need them.

The "growing concern" over art is least likely to mean that modern artists will soon be competing with cars and T.V. for the favor of the masses. However, as educators we may be interested in studying the creative process in order to learn how we might improve both the situation of the creative artist and the artistic sensibilities of the wider society. If this is the case, then a study of the relationship between the artist and his real and potential audience is necessary. If we are to believe the pronouncements of the social critics, their relationship is paradoxical and constitutes a serious problem.

In this paper, by taking my cues from the utopian thinkers, I am trying to describe the seemingly paradoxical relationship between artist and mass. I am especially interested in exploring the trend toward separation of mass entertainment and elite art in the medium where one might least expect it--the film.

One does not have to concur with the utopias of Marx or T. S. Eliot to see that art as art is unpopular, that mass art and elite art have little in common, and that the artist is often in open rebellion against his audience and society. Nor does one have to be a sophisticated sociologist to sense that the present situation falls far short of what might be, given our institutions and our talents. Paradoxically, art in the twentieth century is at the same time more popular, social, and democratic and less popular, less social, and less democratic. Arnold Hauser has observed in his Social History of Art,[8] that not since the middle ages has art production been so social and cooperative. He meant that we have the technology, the organizations, and the talents to bring the experience of art to the widest possible audience. But if art has become social in form and promise, it is becoming less social in experience. Increasingly we are witnessing a clear separation of the social and the aesthetic. Indeed, the most superficial observation leads one to believe that standards of commercial success and social acceptability are in absolute conflict with standards of aesthetic success. To the degree that art is popular and commercially profitable, it tends to be an artistic failure; to the degree that it is successful by the personal standards of the artist, it tends to be unpopular and unprofitable.

The Marxists and elitists have clearly pointed out the trend.

> "On the one hand there is production for the market--vulgarization, commercialization. On the other there is hypostatization of the art work as the goal of the art process, and the relation between art work and individual as paramount. This necessarily leads to a dissolution of those social values which make the art in question a social relation, and therefore ultimately results in the art work's ceasing to be an art work and becoming a mere private phantasy.[9]

The liberal sociologists and the conservative T. S. Eliot would probably agree with Caudwell that a broadly social art appears to be only a theoretical and technical possibility. The trend is toward a division of the social and the aesthetic.

This cleavage is most paradoxically illustrated in the social history of the film. In many important ways, the film is the most characteristic art form of our age. It is the technologically most advanced and certainly the most expensive medium. It is formally the most social medium in that films are produced cooperatively under modern industrial conditions and have been supported by mass audiences. The film began both as commodity and art, elite and mass entertainment. Today, in America at least, it is dividing more clearly into either mass entertainment or minority art. Another paradoxical aspect of the film production is that it is formally a cooperative enterprise, but the relationships between writer, director, producer, actor, and technicians are in fact contradictory.

Cooperation emerges mainly through constraint, the economic constraint to producing together under market conditions or the artistic dictatorship of the director of art films.

The Hollywood producer faced with a shrinking mass audience, a costly medium, and the necessity of making a profit, cannot afford to be creative. The dilemma of the creative artist in Hollywood has been aptly stated by the producer John Houseman, who has tried to straddle the worlds of high salaries and high art.

> "Films (Hollywood) are unpredictable. We don't know our audience. We are working with a mass medium that has lost its mass audience. Before, under the umbrella of the mass audience, we could speak on an occasional project we were excited about, and expected to reach some percentage of the audience. Now we just don't know."
>
> "The interested have a choice--continue to make the money they are accustomed to making or make the films they want to make and go the way of the poor art theater."
>
> "I don't like to make films unless I have some sort of conviction about them: at the moment I am having difficulty finding one."
>
> "Under the spur of panic, studio managers and sales executives are becoming guilty of habitual interference and mutilations which they would not have presumed to practice upon the work of accredited directors and producers a few years ago."[10]

In contrast to the commercial film producer, the independent film maker tends to scorn the large professionalized film industry, the union, and even the audience in preference to the dictates of his own aesthetic judgments.

> "A Call for a New Generation of Film Makers"
> (what the independent film makers of England, France, and America have in common).
>
> "Basically, they all:
>
> mistrust and loathe the official cinema and its thematic and formal stiffness;
> are primarily preoccupied with the emotional and intellectual conditions of their own generation as opposed to the neorealists' preoccupation with materiality;

> seek to free themselves from the over-professionalism and over-technicality that usually handicaps the inspiration and spontaneity of the official cinema, guiding themselves more by intuition and improvisation than by discipline....
> Therefore,
> it is time to bring our film up to date. Hollywood films (and we mean Hollywoods all over the world) reach us beautiful and dead. They are made with money, cameras, and splicers, instead of with enthusiasm, passion, and imagination. If it will help us to free our cinema by throwing out the splicers and the budget-makers and by shooting our films on 16mm., as Cassavetes did, let us do so.
>
> Our hope for a free American cinema is entirely in the hands of the new generation of film makers. And there is no other way of breaking the frozen cinematic ground than through a complete derangement of the official cinematic senses.[11]

Some of the critics of new cinema have noted the separation of art film from commercial film and have interpreted it, as has Caudwell, as a gain for art at the cost of communication.

> "Most of them (I except Francois Truffaut) have resolutely turned their backs on authentic social reality and have immersed us in the complexes and obsessions of an intellectual world concerned primarily with preaching total disengagement...the only moral is an aesthetic one...films are moving out of time, cutting themselves adrift from social organization."[12]
>
> The paradox is, then, that the closer a movie seems to stick to conventions and reality, the more freely it circulates in the fantasy world. That is where the protagonists of avant-garde abstract or "pure" cinema go wrong. They unchain the art from the clichés of the commercial story and obligatory popular appeal only to tie it ever tighter to the director's exclusive, carefully defended subjective view of things. The results may be very brilliant, intriguing, and original, but they are curiously unmoving...Style for its own sake and the preoccupation with technique, in short, are as much a distraction in movies as in any other art.[13]

Ortega y Gasset would applaud the "new" cinema as a movement toward elite art; T. S. Eliot would probably worry about the "objective correlative" of subjective film making. Only the fact itself is certain in contemporary American cinema: the hostile division of films into two camps--the Hollywood dream factories specializing in the production of mass entertainment by rationalized and professionalized formula vs. the highly individual and unbureaucratic enterprises producing elite art by anti-rational and anti-professional non-formulas.

The two divided types of cinema can be distinguished readily in terms of their content, appeal, production conditions and motivations for production, and criteria for success and validity as works of entertainment or art.

Film as Mass Entertainment	Film as Elite Art
1. The Audience: popular vs. unpopular cinema	
a shrinking majority? films directed to as wide an audience as possible; assumption of a passive audience entertained within the context of the familiar myth and cliché.	a growing minority? films directed to an artistic and intellectual elite actively responsive to the world of the director or, more accurately, films directed to the director; in so far as there is an artistic elite, it exists without stable financial and social support from dominant political and economic elites, including the "mid-cult" intellectuals of Hollywood and Broadway.
2. Content and Style: the social myth vs. the objectification of subjectivity	
emphasis on stories and biographies already popular, familiar scenes or familiar dreams as opposed to new ideas and stylistic innovations; probable social functions of content: maintenance of the status quo	prime importance of style and spontaneity; the problems and myths of an artistic and intellectual minority; probable social function: rebellion against the status quo
3. Actors: Celebrities vs. pawns	
star system; stars essential to popular appeal and commercial myth making.	professional actors and non-actors subordinate to directors
4. Criteria of Validity and Success: Commodity values vs. subjective aesthetics	
a good film is a popular film which brings high return on a costly investment.	a good film is one which meets the personal aesthetic standards of the director and his followers.

5. Conditions of Production: industrial production vs. craft production

a. Producer's and Manager's cinema vs. director's cinema

cooperative production by a conventional formula: a script, preferably of a story which has proved popular; script packaged, stars put in, script broken-down and budgeted.	director as dictator; formula highly variable and personal

b. High Cost vs. Low Cost Production

preference for the million dollar "blockbuster"; costs kept up by expensive techniques, star system, inflexible wage and employment system set by the unions and film industry	inexpensive techniques made possible by suspicion of professionalism in industry and in union.

c. Financing

conservative financing through large enterprises	large number of unreliable methods of financing: subscription, limited partnership, small companies, etc.

These dimensions fall into ideal types which only approximate a reality where commercial productions sometimes attain the status of "high" art and independent films sometimes become popular and financial successes. Nevertheless, even without the necessary statistics, I would strongly suspect that few film goers look for art in Hollywood or entertainment in the art houses.

Summary: Some Implications for a Sociology of Creative Behavior

In this paper I have argued that creativity is a social process involving the interaction of artist and society. Specifically, I have stressed the relationship between the artist and his audience, and have pointed out one apparent trend in this relationship--the separation of the artist and "high" art from a mass audience and commercial entertainment. In the United States this division of artistic labor has occured most recently in films, a medium which began as a mixture of entertainment and art.

This division of labor between the emotional and the practical, the commercial and the artistic, has generally been discussed by those who deplore it the most, the social critics of industrial society. Leftist critics interpret the separation of aesthetics from commercial entertainment as another sign of the alienated division of unalienable human labor in a class society. Elitist critics, while approving of a clear separation of quality art from bad art, nevertheless are critical of a socially isolated artistic elite, an elite which neither communicates with nor has the respect of a mass audience. Without adopting the utopias of the right or left, most of us would probably claim that we too deplore the exclusiveness of "high" art and the emptyness of the mass media. Yet as social scientists and educators we have done little to study the social conditions of this apparent separation or suggest reasonable alternatives to the present condition.

I raise this familiar issue here because I believe that the relationship between the artist and his audience does constitute a problem which could direct our proposed research.

Above all, we want to know what constitutes creativity in art. How does the artist make an aesthetic judgment? What is an aesthetic experience for both the artist and his audience? It would be an error to limit our investigation to the self and socially defined artist. Artists as such should, of course, be studied in every socially relevant context from the large industry, to the university, and the rare state of autonomy. In addition, we should study manifestations of aesthetic creativity in everyday life at every social level. Unless we assume a _priori_ that creativity is the monopoly of an elite, we might be surprised to find the experience in the slums as well as in the academies. Moreover, we should experiment with the idea that sophisticated aesthetic judgments can be learned and can be taught to persons who otherwise lack formal education. For example, a very successful, experimental art appreciation class has been conducted for some years by the University of California Elementary School, Los Angeles. I have brought some tapes of this class to the convention to demonstrate the perceptive and sophisticated responses that children can learn to make so-called elite art. Outside of the university, similar classes are being conducted on an informal and voluntary basis in the slums of Venice and East Los Angeles. If we are going to consider the problem of educating a larger audience, then these projects must be studied.

> "The problem is not to confine art to the present-day horizon of the broad masses, but to extend the horizon of the masses as much as possible. The way to a genuine appreciation of art is through education. Not the violent simplification of art, but the training of the capacity for aesthetic judgment is the means by which the constant monopolizing of art by a small minority can be prevented."[14]
>
> Arnold Hauser, The Social History of Art

Footnotes

1. For an historical and sociological discussion of the works of these and other social critics see: Raymond Williams, Culture and Society, 1780-1950, Garden City: Doubleday Anchor Books, 1960.

2. For a discussion of the "objective correlative" see: F. O. Mathiessen, "The 'Objective Correlative'," *The Achievement of T. S. Eliot*, New York & London: Oxford University Press, pp. 56-80.

3. T. S. Eliot, "The Social Function of Poetry," *On Poetry and Poets*, London: Faber and Faber Ltd., p. 20.

4. Ernst Fischer, *The Necessity of Art*, London: Pelican Books, 1963, pp. 101-102.

5. Three important discussions of the "end of ideology" are: Seymour Lipset, "The End of Ideology?," *Political Man*, Garden City: Doubleday, 1960, pp. 403-417; Daniel Bell, *The End of Ideology: On the Exhaustion of Political Ideas in the Fifties*, New York: Collier Books, 1961; Henry David Aiken, "The Revolt Against Ideology," *Commentary*, April, 1964, pp. 29-39.

6. Jose Ortega y Gasset, *The Dehumanization of Art*, Garden City: Doubleday Anchor Books, 1956, p. 13.

7. James Baldwin, "Mass Culture and the Creative Artist," *Daedelus*, Spring, 1960, p. 375.

8. Arnold Hauser, *The Social History of Art*, Vol. IV: Naturalism, Impressionism, the Film Age, New York: A. Knopf, Vintage Books, 1958, esp. pp. 226-259.

9. Christopher Caudwell, *Studies in a Dying Culture*.

10. "An Interview with John Houseman," *Sight and Sound*, August, 1962.

11. Jonas Mekas, "A Call for a New Generation of Film Makers," *Film Culture*, No. 19, pp. 1-3.

12. Jacques Sillier, "New Wave French Cinema," *Sight and Sound*, Summer, 1961, pp. 118-119.

13. A. Alvarez, "Spellbound" (a review of three books on films), *The New York Review of Books*, Dec. 31, 1964, p. 16.

14. Arnold Hauser, p. 259.

XIV

MY PERSONAL EXPERIENCE IN ART

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A. An Analysis of Environmental and Habit Factors Pertinent to Creative Professional Career.

I assume everyone here is acquainted with literature on creativity, so I will go directly to an analysis of my personal experience as a basis for discussion. My particular thesis is that certain personal "handicaps" turned me to artistic activity in early childhood.

(1) Two severe cases of pneumonia in early childhood left me very weak, awkward, poor in sports and unable to participate effectively in outdoor play. Maternal apprehension and severe North Dakota weather extended and reinforced this feeling of being ineffectual in group play.

(2) Being the only Jewish child in this small North Dakota village made me feel an "outsider." A strong moral home atmosphere with emphasis on the fact that any improper behavior would reflect unfavorably on the Jewish religion put an overemphasis on propriety of behavior, and I felt guilty when I participated in rowdy, small-town childhood play.

(3) My poor health and my mother's poor health made a move from North Dakota imperative. From fifth grade to sophomore year in high school, my family moved many times so that normal long-term friendships did not develop.

(4) General Eastern European belief in developing talents and interest in culture established cultivated tone in home. We all took piano lessons. Mother, cut off from normal (church) affiliations, read a great deal, and we children were encouraged to read, draw, paint, play piano, etc.

B. Factors Leading to Painting.

(1) Cold North Dakota weather, inadequacy in sports, supportive family atmosphere started me painting. School program in art was also stimulating. Some success and approbation made me draw and paint a great deal, so I naturally developed more than an average level of competence.

(2) When I was in the seventh grade, we moved to San Bernardino, California. Since I was lonesome and unacquainted, I was given special watercolor lessons after school. Mother wanted to develop my "talent." My brother was considered the potential pianist.

(3) Very stimulating and beautiful art teacher in second and third year of high school provided further and most important encouragement. Very personal interest on part of teacher who wrote letters to me over summer vacations, and who invited me to visit her, and remained interested in my drawing and painting, stimulated me to continue to work on my own outside of school.

(4) Majored in art in college. Started to teach at San Jose State College and was very disappointed in the narrow horizons and lack of artistic involvement on the part of most of the art faculty. I decided not to become a typical teacher, and set up a program of painting activity for week ends and spare hours, which developed into habits of work which left me feeling guilty and futile when I was not painting.

C. Adult Work Habits.

Stimuli. Seeing exciting works of art, exhibitions, talks with stimulating artists, changes of season, changes of environment, scheduled exhibitions, sales, protracted periods of involvement with writing, teaching or other "distracting duties" tend to initiate periods of intense painting activity.

Usual pattern of work.

A work schedule is established, based on available time and competing activities connected with teaching and writing. In doing landscape paintings (my most characteristic type of painting activity), I start out by touring in my car. I either see a motif I like or find a general area that seems right and park the car and walk about the area. This can be ridiculously extended. I dislike company on a painting expedition because I cannot be as compulsively fussy about just the right spot as I prefer to be. I finally settle down after many small moves, changes of easel position, etc. I set up my easel, sketch in the subject (sometimes making changes in composition, etc.), and usually paint very hard until the painting is about half done, and feel exhilarated and pleased. About half way to completion, I suddenly feel disappointed with my results; the picture doesn't seem up to the potential of the subject; and I have to almost force myself to continue. Sometimes I quit at this point. When almost finished, I take the painting home to my studio, put it up for study away from the actual location, put it in a mat. I study it, refine details, rework minor areas, and fuss, even though I know from experience that what I am doing is of minor importance. Sometimes I decide to repaint the entire picture; I may do this and feel much more satisfied with the second painting. Years later I can see almost no difference in the quality of the two paintings.

Changes. Stimulated by seeing exciting works of art. This often first expresses itself in wakeful nights with much imaginative activity. Night imagination is vivid and hallucinatory. I tend to get ideas for changes that are difficult to sustain in the face of established habits of work. Sometimes will write down ideas which appear during these wakeful periods so that I can refer to them in the daytime when I am most apt to follow established procedures.

XV

PRELIMINARY EFFORTS TO IDENTIFY CREATIVITY

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The creativity of our young people is one of the nation's most important potential assets. Efforts to identify those young people with creative talents have thus far not been very successful. It seems worthwhile at the present time to study one effort to develop a measure of creative potential, and also to review studies of the characteristics of students showing evidence of creativity in various fields.

The test mentioned was developed as part of an aptitude classification test battery and was designed to measure a particular job element called "ingenuity." The definition of this job element on which the Ingenuity Test was based is the ability to invent or discover a solution which represents an unusually neat, clever, or surprising way of solving an existing problem.

To provide an efficient and practical measure, a large number of ingenious solutions to practical problems were collected. Brief descriptions of the problems and the general area in which the solutions were found presented and the key word or phrase identifying the ingenious solution was noted. A series of choices indicating a variety of possible first and last letters for this key word were given. In this way the person taking the examination was required to think up a solution rather than recognize its applicability from a list of possible choices.

In preparing such items, it is important to use problems for which the ingenious solutions are not known to the examinees. Obviously, if this is the case, the test is merely one of memory. Similarly, care is taken to avoid problems for which the solution can be obtained by deductive reasoning from the facts given in the statement of the problem. Also, it is important to avoid having the statement of the problem define a particular word or concept so completely that the item is in fact merely a vocabulary item of the type where the definition is presented and the word asked for. It is also important that detailed knowledge of the specific field in which the ingenious solution was found should not be necessary to answer the question. The key word should so obviously provide a pat and unique solution to the problem that the examinee experiences a definite feeling of closure. The following item illustrates this test:

> As part of a manufacturing process, the inside lip of a deep cup-shaped casting is machine threaded. The company found that metal chips produced by the threading operation were difficult to remove from the bottom of the casting without scratching the sides. A design engineer was able to solve this problem by having the operation performed
>
> A. i----p h--h
> B. m----n c--e
> C. f----r w--l
> D. l----d b--k
> E. u----e d--n[1]

To what extent is this resulting test of 24 items measuring something different than the usual reasoning or verbal test? An analysis of the variance of this test using a sample of more than 1,000 twelfth grade students indicated that about 20% of the variance was error variance, about 55% was overlapping variance in terms of the other 18 measures included in the battery, leaving about 25% of the variance of the scores as unique variance.[2] The Ingenuity Test has its highest correlation with tests of vocabulary, reading comprehension, and reasoning. These tests account for most of the overlapping variance with the Ingenuity Test.

It is interesting to note that scores on this 24 item test increase from an average of 10 for ninth graders to an average of 14 for twelfth grade students. It is also of considerable interest in view of the somewhat mechanical nature of some of the items, such as that given in the illustration above, that the mean scores for boys in grades nine through twelve are only between a half a point and a point higher than those for the girls.

The data in Tables 1 and 2 give the results for studying the validity of this test in predicting criteria of originality in high school art and English classes. The first row of data regarding School A indicates the correlations of the vocabulary tests and the ingenuity tests with ratings of a specific art project. The Ingenuity [illegible] Vocabulary Test. The teachers in these classes were also asked to provide overall ratings of the student's originality as shown throughout the course in art. It is shown on the second line that the differences here are even greater in favor of the "Ingenuity" Test. Line three shows similar overall ratings obtained from a single class of seniors in art. In this case, although both correlations are substantial, the correlation with the Vocabulary Test is slightly greater. This was also true when the grades in the art course for this class were compared with the two test scores.

Table 2 shows a similar comparison of these two test scores with teachers' ratings of the originality shown in writing a specific short story which had been assigned to the students. Here again the correlation with the Vocabulary Test is higher. In other schools, teachers were asked to rate the overall originality shown by their students in their writing during the year. The correlations of these ratings are shown in the last two lines of this Table. It is clear that the correlations are even higher for Vocabulary with these overall ratings.

Although these studies with relatively small numbers of students can be interpreted as little more than tentative indicators, they suggest that vocabulary and general English ability tend to overshadow originality in influencing teachers' ratings in high school English classwork. In art, on the other hand, academic ability as measured by such tests as Vocabulary may be a smaller factor in influencing the ratings of originality.

The FACT Ingenuity Test was used as a prototype for a test included in the Project TALENT battery under the name of Creativity. The Project TALENT tests were given to all the students in grades nine, ten, eleven, and twelve in a 5% sample of high schools throughout the nation. Although we will have to wait some time for definitive results on which of these students have shown creative talent, the findings from the follow-up studies carried out one year after they had completed high school are of immediate interest.

Figure 1, for example, shows the profiles of nine aptitude and ability tests of three groups of girls tested in the eleventh grade in March, 1960. When followed up in the summer of 1962, one year after graduating from high school, 235 of these girls reported they planned careers as artists, 125 careers as musicians, and 145 careers as authors or writers of various kinds. It is interesting to find that the three highest scores on these nine tests for the girls planning careers as artists were on tests of Visualization in Three Dimensions, a test of Mechanical Reasoning, and the test of Creativity. The only one of these test on which their scores were below the average score for all twelfth graders was the Arithmetic Computation test. On this test, their performance was only a little below that of the average eleventh grade student.

[illegible] of the girls planning careers as musicians are generally lower than those of the artist group. Their highest scores are in Introductory Mathematics, Creativity, and Mechanical Reasoning. The only score which is below that of the average eleventh grade girl is for Abstract Reasoning.

The third group consists of those planning careers as authors or other types of writers. These girls have their highest scores on Reading Comprehension, English, Introductory Mathematics, and Creativity. None of these scores are below the average for all eleventh grade girls, although their scores on Arithmetic Computation and Visualization in Three Dimensions are relatively low in comparison with their other scores.

In Figure 2 are shown the results of these same three groups of girls tested when they were high school juniors on six information tests. The highest score for the artist group is in Literature. This score is however, much below that of the group of girls planning careers as authors or other types of writers. The girls planning careers as musicians have their highest scores in tests of Musical Information and Mathematical Information. They excel even the author group in Musical Information. The group of girls planning careers as authors have generally very high information scores, being exceeded only by the artist group on Mechanical Information in addition to the musician group on Musical Information.

Turning to Figure 3, we find similar profiles for boys who one year after graduating from high school planned careers in these fields. Represented in these groups are 220 boys planning careers as artists, 130 planning careers in music, 115 planning to be authors or other writers, and 204 planning to be architects. For the boys planning careers as artists, the findings are quite similar to those for the girls, with their highest score being Visualization in Three Dimensions; the next highest, Creativity; and the third, Abstract Reasoning. The scores of the boys are just slightly above the mean for all of the eleventh grade boys in Mechanical Reasoning. Like the girls, their score in Arithmetic Computation is low and they are also below the mean of all eleventh grade boys in Arithmetic Reasoning.

The boys planning careers in music, like the girls having similar plans, have their highest score in Introductory Mathematics. However, the only other test scores they have in which their averages are above those of all eleventh graders are English and Reading Comprehension. Creativity is next, but it is somewhat below the mean for all eleventh grade boys.

The boys planning careers as authors have considerable variability in their score patterns. Like the girls planning such careers, their highest scores are in English, Reading Comprehension, Introductory Mathematics, and Creativity. The only score below the mean for all eleventh grade boys is on Mechanical Reasoning, but the Visualization in Three Dimensions is also relatively low.

The scores for the group of boys planning careers as architects are uniformly quite higher than both the boys and girls planning careers as artists, they have high scores in Visualization in Three Dimensions and in Creativity. The largest difference between their profiles and those of the artist group are with respect to the Introductory Mathematics and other academic tests. They are substantially higher in all of these abilities.

Figure 4 shows the information scores for these groups. The boys planning careers in music and art show rather similar profiles on these tests. The score on the Musical Information test for the boys planning careers in music are especially high and they are also higher than the boys planning careers in art on the Mathematics test. On the other tests, the boys planning careers in art have slightly higher scores than the music group. Both groups have scores somewhat below the mean of eleventh grade boys on the Mechanical Information test.

As would be expected, the boys planning careers as authors have unusually high scores on the Literature tests. Their scores are also relatively high on the Musical Information test, and the Vocabulary test. They are below the mean for all eleventh grade boys on the Mechanical Information test. The architect group had its highest score in Mechanical Information. They are also relatively high on the Vocabulary and Music Information tests. This is also the only one of the four groups which is well above the mean on the Mechanical Information test.

Although these data on high school students one year after graduation from high school certainly do not represent anything like ultimate criterion groups, the evidence available indicates that these career choices are beginning to be relatively realistic and stable. The relatively high standing of nearly all of these groups on the Creativity tests, and the general reasonableness of the variations in their score patterns on the other tests included here, suggests that these trends are probably pointing in the right direction. Another finding giving some weight to these results is the similarity of the profiles for the boys and girls.

Another set of data from Project TALENT has been made possible by the reports from the high school teachers and counselors regarding the special talents of these boys and girls. The profiles of the twelfth grade boys and girls nominated as having outstanding talent in art, dramatics, music, and writing are shown in Figures 5 and 6. It should be remembered that these nominations were made in 1960 when these students were still in high school.

The number of Project TALENT twelfth grade boys nominated by the staff of their high schools as having outstanding talent in art, dramatics, music, and writing were 93, 64, 85, and 103 respectively. Similarly, there were 158, 100, 115 and 219 twelfth grade girls nominated as having outstanding talent in art, dramatics, music, and writing ability respectively.

The boys nominated as having outstanding talent in art by teachers and counselors in the twelfth grade are not especially high on most tests as shown in Figure 5. Their highest average score is on the test of Visualization in Three Dimensions. Other average scores well above the average for all twelfth grade boys were in information regarding Music and Literature, Abstract Reasoning, and English Usage. They were below the average for all twelfth grade boys on the tests of Arithmetic Reasoning and Mechanical Information.

The group of boys nominated as having outstanding talent in dramatics had their two highest average scores in Music and Literature. Vocabulary was their next highest score and they also had relatively high scores on Mathematical Information, Introductory Mathematics, Abstract Reasoning, Reading Comprehension, English Usage, Creativity, and Arithmetic Reasoning.

The boys nominated as having outstanding talent for performing on a musical instrument were very high on Musical Information. Their other high scores were on Literature, Vocabulary, English Usage, Mathematical Information, and Introductory Mathematics. They were well below the average for all twelfth grade boys in Mechanical Information.

The group of boys nominated for outstanding talent in writing were unusually high on a number of tests. Their highest scores were on the Literature and English Usage tests. They also had very high scores on the tests of Vocabulary, Music, Mathematic Information, Reading Comprehension, and Introductory Mathematics.

The picture for the girls as shown in Figure 6 is generally similar. However in some areas such as art, the general score level for the girls nominated is considerably higher. As for the boys their highest score is on the test for Visualization in Three Dimensions. Other high scores include Mechanical Reasoning, Mathematical Information, Literature, Biological Science Information, Creativity, Music Information, and Introductory Mathematics.

The girls nominated for outstanding talent in dramatics also have generally high scores. Their highest scores are for Mathematical Information, Vocabulary, and Introductory Mathematics. They also have very high scores for Music, Literature, and Biological Science Information.

As in the case of the boys, the girls nominated as having outstanding talent for performing on a musical instrument are unusually high on the test of Musical Information and have very high scores on tests of Mathematical Information, Introductory Mathematics, and Vocabulary.

The group of girls nominated as having outstanding talent in writing have very high scores on many tests. The highest are Literature, Vocabulary, Mathematical Information, Introductory Mathematics, Biological Science Information, and Creativity.

It is of special interest to compare the aptitude and ability patterns of those nominated by the high school staff with those planning specific occupational careers in the same fields a year after being graduated from high school. In general for both boys and girls, the patterns of the nominees are very similar to the patterns of those planning careers in the field. In all but one comparison, art for boys, the nominees are a little higher on each variable than those planning a career in the field. For girls, nominees are especially higher in comparison with those planning careers in music. For boys, the differences favor the nominees most in the field of writing.

Although the findings reported here can only be regarded as preliminary estimates of the patterns of aptitude and ability required in these fields, their consistency and reasonableness suggest they are likely to be confirmed by the five, ten, and twenty year follow-up studies. Certainly these students planning careers in the creative arts do tend to score higher than their fellow students on the test of Creativity. Later analyses should provide a reasonable basis for early identification of creative potential.

Table 1

CONCURRENT VALIDITY COEFFICIENTS FOR CERTAIN TESTS OF THE FACT BATTERY AND CRITERIA OF ORIGINALITY IN HIGH SCHOOL ART CLASSES

						Validity Coefficients					
						TEST 5 VOCABULARY			TEST 11 INGENUITY		
SCHOOL	GRADE	CRITERION	N	M	S.D.	M	S.D.	r	M	S.D.	r
A	10	Project rating	72	2.6	1.3	15.7	8.6	.30	11.1	4.6	.48
A	10	General rating	71	2.8	1.4	15.7	8.6	.21	11.2	4.6	.48
B	12	General rating	24	0.9	0.7	27.2	10.8	.42	13.1	4.1	.40
B	12	Course grades	24	3.2	0.9	27.2	10.8	.60	13.1	4.1	.58

* Validity coefficients not corrected for attenuation in the predictor variables were as follows (reading down): Vocabulary - .27, .19, .42, .56; Ingenuity - .43, .43, .35, .50

Table 2

CONCURRENT VALIDITY COEFFICIENTS FOR CERTAIN TESTS OF THE FACT BATTERY AND CRITERIA OF ORIGINALITY IN HIGH SCHOOL ENGLISH CLASSES

						Validity Coefficients					
						TEST 5 VOCABULARY			TEST 11 INGENUITY		
SCHOOL	GRADE	CRITERION	N	M	S.D.	M	S.D.	r	M	S.D.	r
A	10	Project rating	28	3.1	0.9	17.1	8.6	.46	12.6	4.1	.33
C	11	General rating	56	3.1	0.8	24.0	11.3	.69	15.2	4.1	.53
D	12	General rating	69	4.0	0.8	31.6	10.0	.68	16.3	3.8	.34

*Validity coefficients not corrected for attenuation in the predictor variables were as follows (reading down): Vocabulary - .43, .65, .60; Ingenuity - .29, .46, .28

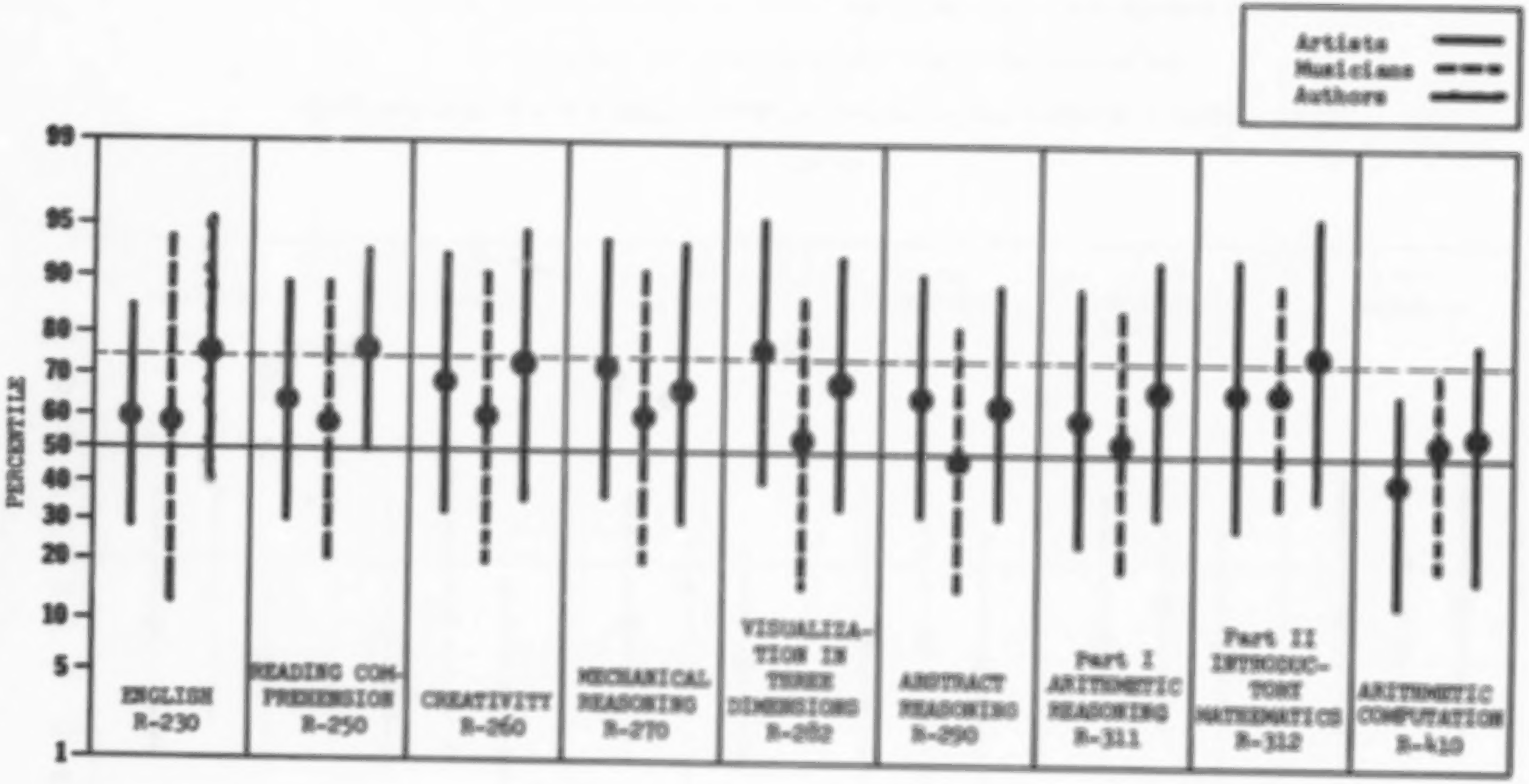

Figure 1

SCORES OBTAINED IN THE ELEVENTH GRADE ON PROJECT TALENT APTITUDE & ABILITY TESTS

OF GIRLS WHO ONE YEAR AFTER HIGH SCHOOL GRADUATION ARE

PLANNING CAREERS AS ARTISTS (235), MUSICIANS (125), AND AUTHORS (145).

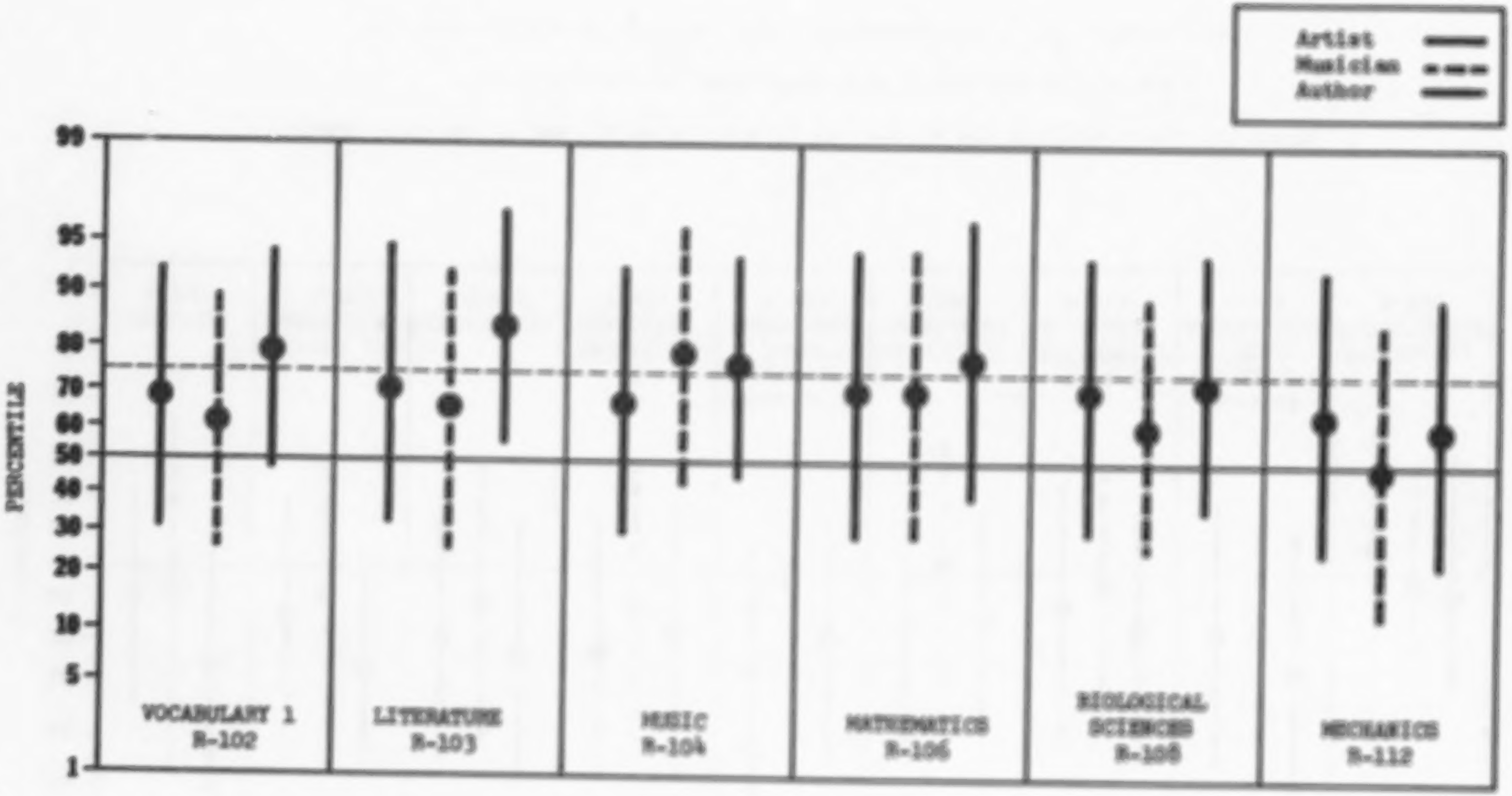

Figure 2

SCORES OBTAINED IN THE ELEVENTH GRADE ON PROJECT TALENT APTITUDE & ABILITY TESTS

OF GIRLS WHO ONE YEAR AFTER HIGH SCHOOL GRADUATION ARE

PLANNING CAREERS AS ARTISTS (235), MUSICIANS (125), AND AUTHORS (145)

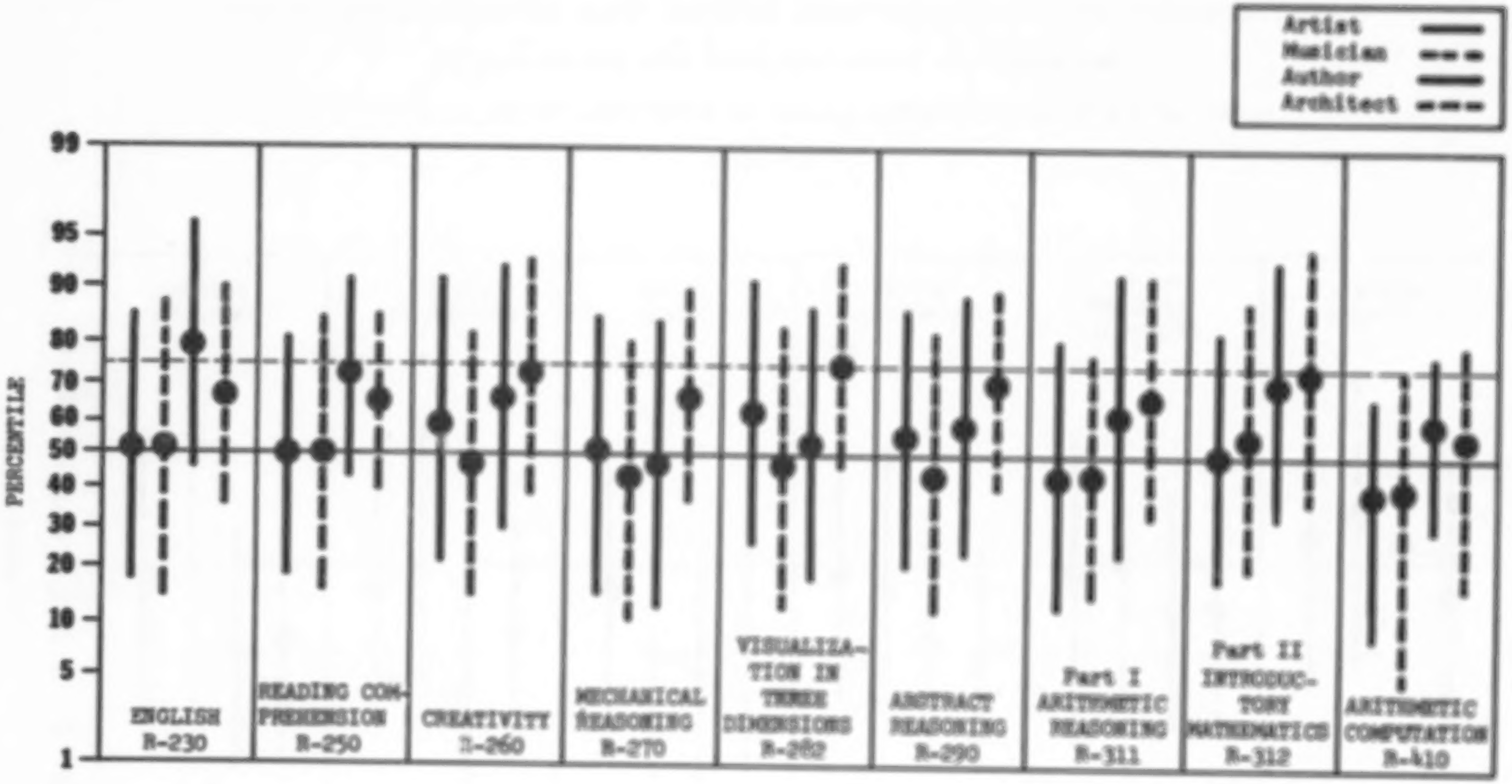

Figure 3

SCORES OBTAINED IN THE ELEVENTH GRADE ON PROJECT TALENT APTITUDE & ABILITY TESTS

OF BOYS WHO ONE YEAR AFTER HIGH SCHOOL GRADUATION ARE

PLANNING CAREERS AS ARTISTS (220), MUSICIANS (130), AUTHORS (115), AND ARCHITECTS (204)

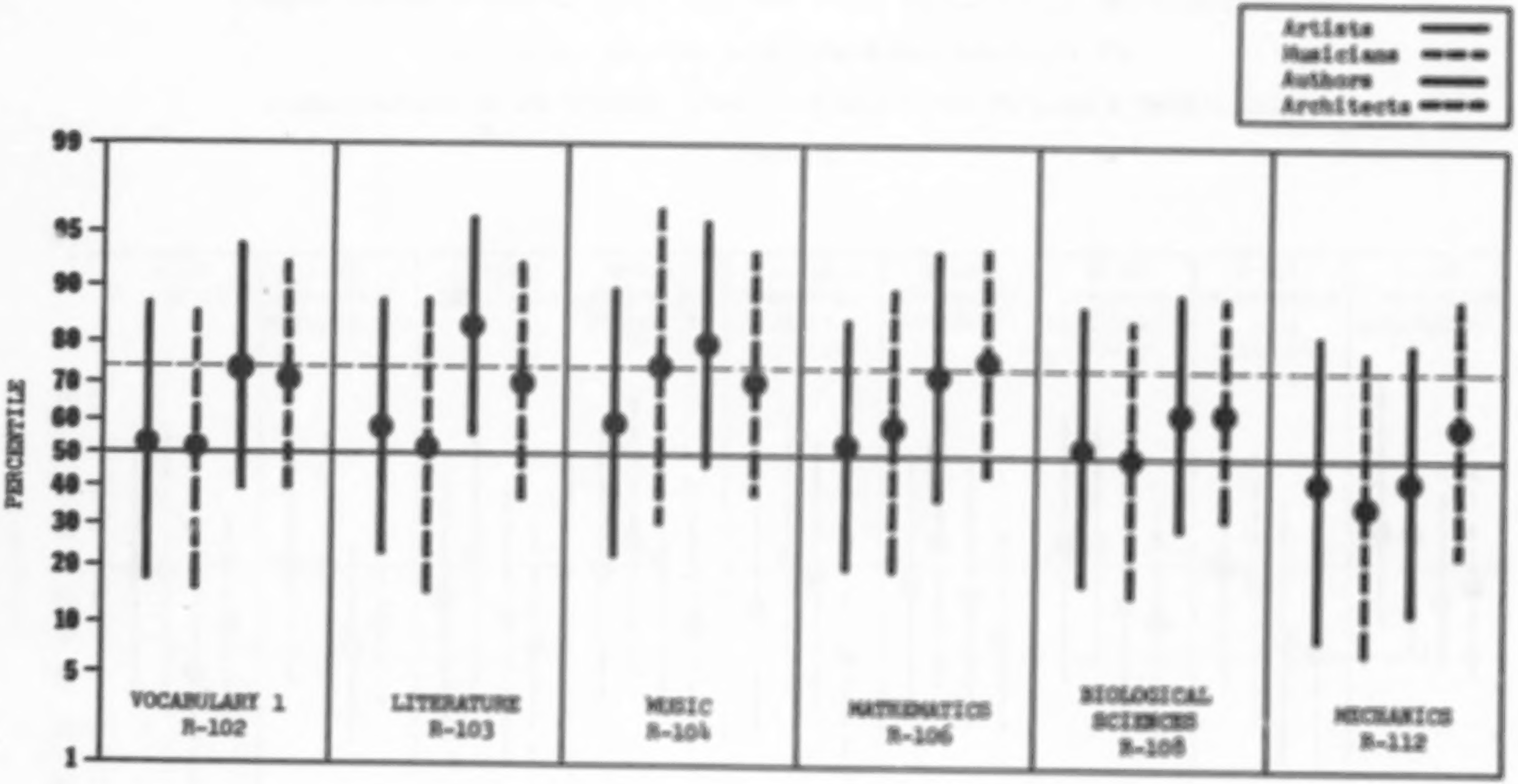

Figure 4

SCORES OBTAINED IN THE ELEVENTH GRADE ON PROJECT TALENT APTITUDE & ABILITY TESTS

OF BOYS WHO ONE YEAR AFTER HIGH SCHOOL GRADUATION ARE

PLANNING CAREERS AS ARTISTS (220), MUSICIANS (130), AUTHORS (115), AND ARCHITECTS (204)

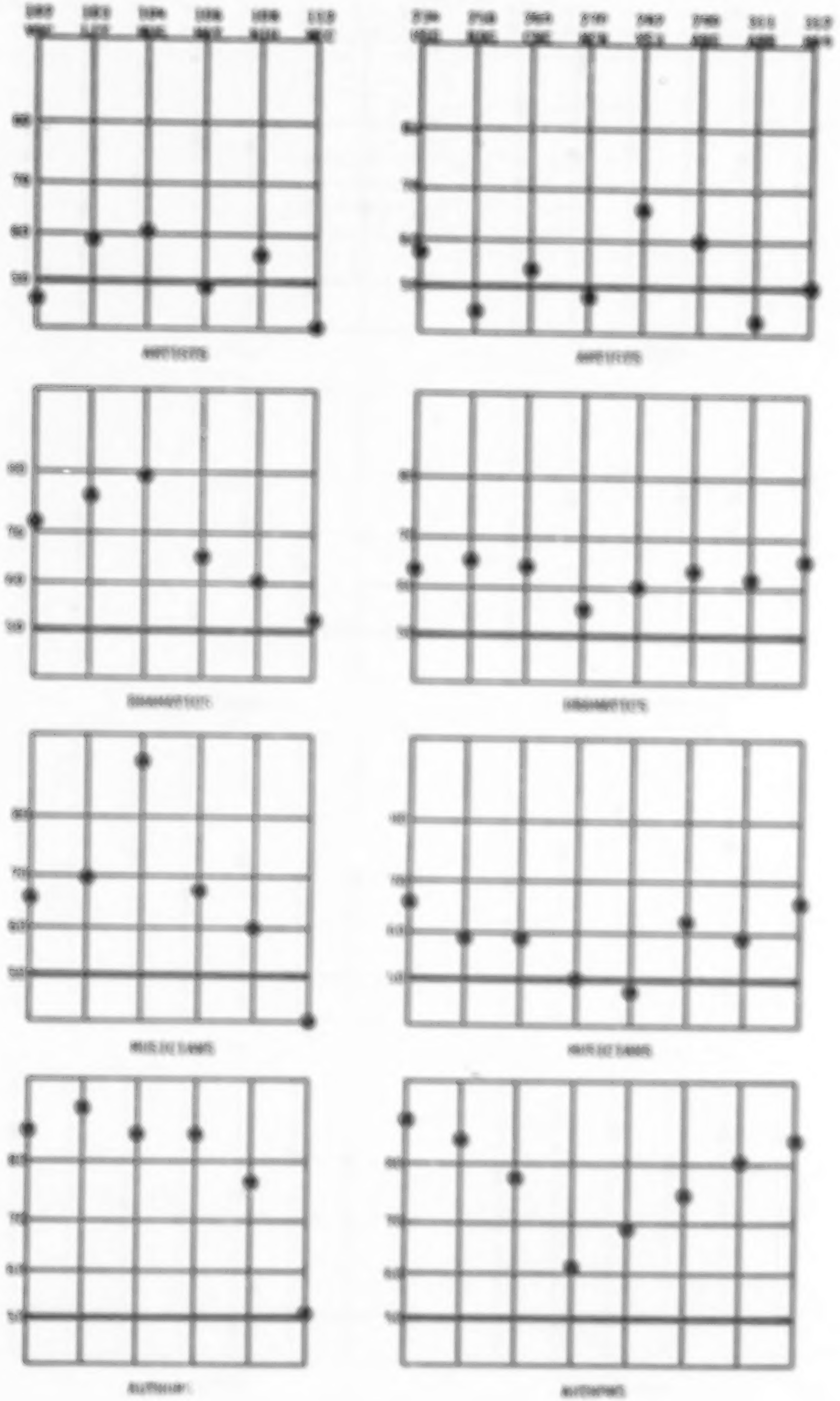

Figure 5

PATTERNS OF APTITUDE AND ABILITY FROM TESTS TAKEN IN THE TWELFTH GRADE BY MALES WHO ONE YEAR AFTER HIGH SCHOOL GRADUATION INDICATE THEY PLAN CAREERS IN ART, DRAMATICS, MUSIC, and WRITING.

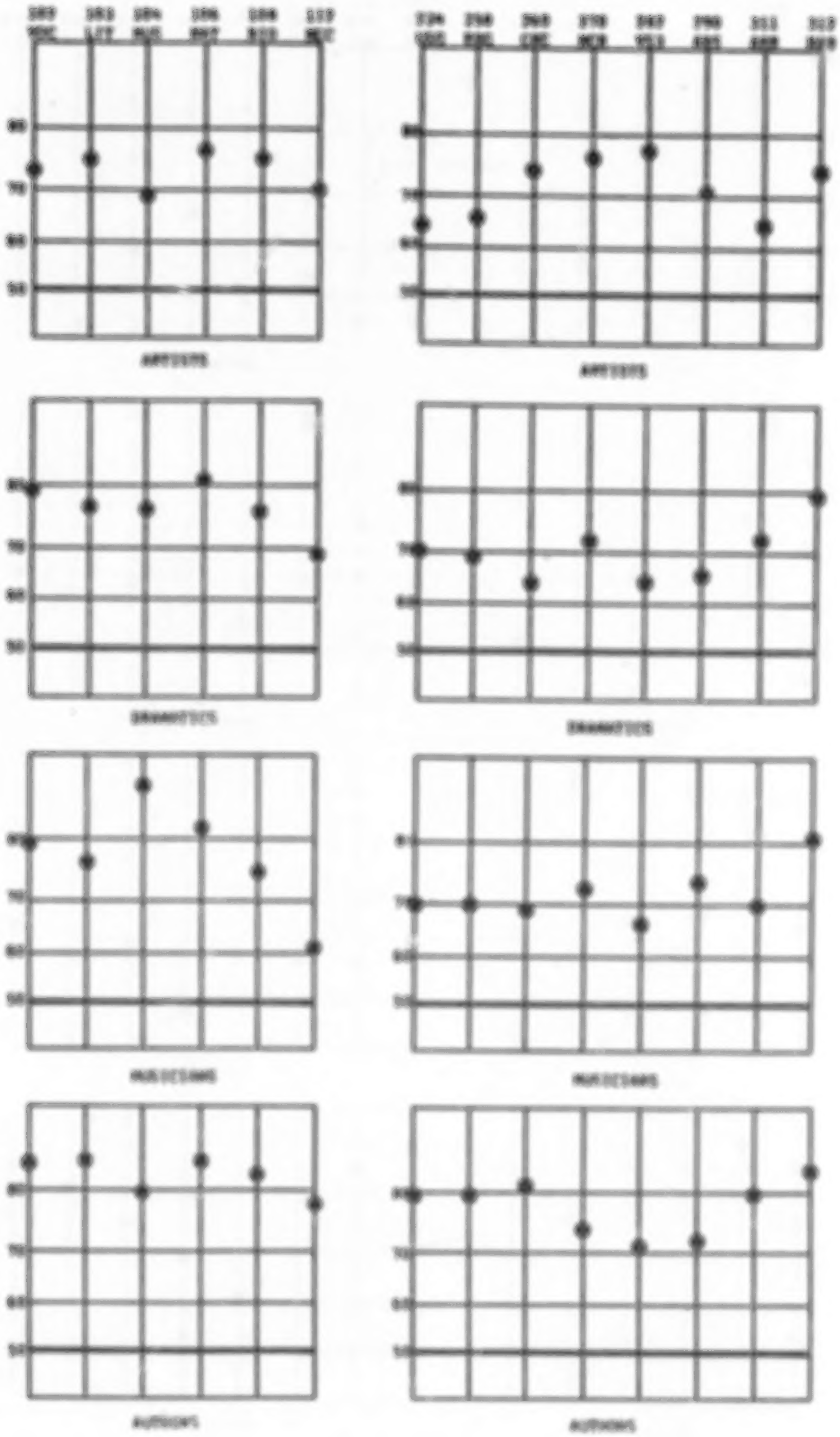

Figure 6

PATTERNS OF APTITUDE AND ABILITY FROM TESTS TAKEN IN THE TWELFTH GRADE BY FEMALES WHO ONE YEAR AFTER HIGH SCHOOL GRADUATION INDICATE THEY PLAN CAREERS IN ART, DRAMATICS, MUSIC, and WRITING.

Footnotes

1. Flanagan, John C. "The Definition and Measurement of Ingenuity," Taylor, C. W., and Barron, F. Scientific Creativity: Its Recognition and Development, New York: John Wiley & Sons, Inc., 89-98.

2. Flanagan, John C. FACT Technical Report, Chicago: Science Research Associates, Inc., 1959.

XVI

PROBLEMS IN THEORY CONSTRUCTION IN ART EDUCATION

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Not too long ago, I found myself watching a small group of boys playing a rather simple, makeshift game. They had some small pieces of wood which they were attempting to throw into a discarded peach basket. Each youngster would pick up his piece of wood; step back to a distance that he set for himself; then, he would lob the wood toward the basket. "Success" was determined by getting the wood into the basket; "failure," by missing. This process was repeated over and over again by the youngsters. Each time, the youngster would set the distance between himself and his target, the basket. It was interesting to watch the boys: there was the fellow who "played it safe," always staying close to his target with reasonable assurance of "success"; there was the boy who adjusted his distances in terms of his previous successes or failures; then, there was the youngster who made "life" hard for himself by moving further and further from his target without any reference to success factors in his performance. At the time, I was teaching a seminar in research. I could not help but think of the simple research designs that could be developed from my observations. The youngster's task, of course, dealt with a relatively simple problem: throwing the wood into the basket. Also involved were some very interesting factors: how they went about setting a goal for themselves. I could not help but think that this uncomplicated episode had within it some key factors involving a child's aspirations in relation to the realities of his task. In my seminar we discussed the observations and set about constructing a series of hypotheses. These dealt with tolerance of ambiguity, thresholds for repeated "success" or failures, responses to previous experience in setting new goals and limits, and problems in setting standards for performance. What impressed me at the time (and continues to impress me) is the potential for projecting hypotheses for study using a relatively simple task as a basis for generating meanings and implications.

A youngster throwing wooden forms into a basket provides a limited source for data. The limitations of the activity (its relative simplicity in the scheme of human behavior) serve as limitations for the generalizations that can be developed from the data. When we come to the problems and possibilities for longitudinal study in the arts, we have an infinitely greater potential for generating hypotheses and reaching conclusions as to the meaning and significance of the data. One can note that an artist sets the limits for what he does by his level of aspiration, the quality of his idea, the medium he selects, and the skill with which he gives form to his ideas and feelings. His relative "success" or "failure" is a function of very complicated factors in making critical judgments.

I feel that not enough attention has been given to the challenge of building theoretical constructs from sustained observations of artists: the ideas and intentions that motivate their work; the choices and controls that operate as they deal with their media; and the problems of evaluating the forms created. From my point of view there needs to be a greater willingness to proceed from the particulars of specific behaviors (and statements about such behaviors) to more generalizable factors that pertain to artistic production. There needs to be greater willingness to attend to theory construction as part of the research endeavor.

In this paper I should like to address myself to two major problems confronting longitudinal researches involving artistic process and the resultant forms of such process. My particular examples will be derived from the visual arts; painting and sculpture; however, I am confident that my observations will pertain to other art forms. These problems, as I see them, do not stem from techniques of gathering and recording data; rather, they stem from the fact that theory cannot be taken for granted.

My first assertion is that theory building in art education must proceed from a point of view about the nature of art; my second is that any view of the artist must take into account his entrance into the stream of time, space, and values. In each case, the means that we choose to approach these problems will dictate the verification procedures to be followed. Our percepts are intimately related to our concepts.

> "Don't you make theories as you go along, Pointer?" "I like finding facts better," Pointer thought. "Of course, if you cannot find a fact lying around, you have to fish for it with a theory." Both men were silent on that; both lost in thought. (A. Fielding, The Craig Poisoning Mystery, p. 65)

This position has been stated by Elizabeth Maccia (Curriculum Theory and Policy, Occasional Paper 65-176, Educational Theory Center and Social Studies Curriculum Center, Ohio State University): "It is not the case that theory should be discounted because it is speculation. It is necessary to have a way of looking at, even when one is looking at facts. It is not a case of preferring facts to theory." (p. 2)

Let me turn now to the nature of art and artistic activity. Men have always projected ideas and feelings in symbolic form. Among these projections there is

3

a class of objects now referred to as "art." At a very personal level, these forms are motivated by a desire for self satisfaction; at a more conventionalized level, these forms provide a vehicle for participating in or contributing to the cultural patterns of the time. Our symbols: words, images, sounds, and gestures are the means by which we refine our perceptions and put them in order. Inner feelings, hunches, flashes of inspiration find their testing point with reality through the forms that are created to embody their meaning.

Both science and art give symbolic order and form to our universe. The forms of science seek objective knowledge and understanding while courting the mysteries of the unknown; the forms of art seek subjective and aesthetic harmonies derived from an individual's relationship to his experience. "Both the man of science and the man of art live always at the edge of mystery, surrounded by it; both always as the measure of their creation, have had to do with the harmonization of what is new and what is familiar, with the balance between novelty and synthesis, with the struggle to make partial order in total chaos." (R. Oppenheimer)

Viewing the traditions of art, one is forced to the inescapable conclusion that there is no single, fixed way to generalize about the nature of artistic form except as to admit to its open-ended and metaphoric nature. Through painting and sculpture, some artists have devoted themselves to the search for visual forms, faithful to an almost Pythagorean ideal of geometric harmony; others have sought the expressive and random qualities of a spontaneous, unplanned utilization of materials. Some painters and sculptors have relied heavily upon lyrical and poetic forms; others upon communicating a sense of violence and conflict. Some art forms are derived from a clearly defined tradition in terms of content and/or technique; other art forms have grown in a period of dramatic innovation and change. In each case, the artist is involved in the exploration of reality, the penetration of what for him becomes an ever wider and/or deeper expression of ideas or feelings.

Artists are born into a stream of traditions and events. No two persons or events can be found on the precise coordinates of time, space, and action. No event ever repeats itself in precisely the same terms. We build our structure of understanding and concepts (our "reality") through relating the various events (real and imagined) in our experience. Timing and circumstance combine as key factors in shaping individual abilities and directions. The artist is in tension with his environment--in part, shaped by its circumstances; in part, driven by his own capacities to transcend these circumstances. His actions become inventive by departing from the forms of preceding actions. The degree, extent, and significance of these departures vary in relation to a larger configuration that comprises his traditions. An artist can never be a completely free agent obeying his own will, without constraints. His situation is bound by a structure of prior ideas and images. His humanity requires that he reach beyond these ideas and images. An act of artistic creation becomes inventive by departing from the preceding action in its configuration or class. As has been pointed out by George Kubler (The Shape of Time: Remarks on the History of Things), the more common category of inventions results from actions and realizations involving previously unrelated components identifiable within a structure. A much rarer inventive act reaches beyond the configuration in such a way as to create a basically new form or concept--a beginning point for evolving a new configuration or structure. An act of this kind can be likened to a mutant gene; it may grow from a relatively unaccountable source. Its importance and significance must stand the test of time; its effects should give rise to new and important forms.

Let me return now to the challenge to be faced in designing longitudinal research in the arts. My assertion is that our research designs should be cognizant of the value question (or questions) inherent in the research being undertaken. It is also necessary to cast the problem in terms of studying how artists seek to give form to and realize meaning through their images, how factors such as timing, space, and sequence serve to structure the resultant art form.

Today's art world poses a particular problem as we seek to establish a reliable index for judging the value of works of art. In part, the problem is a function of our mass media where images are distorted and conveyed with great speed. Picasso paints a picture today; tomorrow it can be seen in Time, Life, Look and Newsweek (to say nothing of Playboy, Esquire, and the Ladies Home Journal). While images are "conveyed" at fantastic rates of speed, the capacity to understand and deal with these images has not been significantly enlarged. Add to the phenomenon of mass media, the growing commercialization of the museum and gallery world and our problem becomes compounded even further. In the current art marketplace, artists are "launched" as if they were new models of the latest sports car or refrigerator.

The artist's present commitment to the precarious occupation of creating new forms expressive of ideas and feelings is taking place in a strange context. The stream of today's "events" include some frightening prospects. Just read your newspapers to verify this observation. Values are "professed" but negated in operations. For the artist, it no longer makes sense to deal with static conventions of beauty and truth. It makes little sense to paint a serene landscape when the man-made landscape is one of concrete and steel; it is difficult to do sculptures of heroes on gigantic stallions when the battles of today are on far reaching economic and political fronts. In short, it is difficult to resort to 18th and 19th century imagery in response to 20th century dynamics.

The question of value in art cannot be resolved by looking at "what's current"; we cannot arrive at what "ought to be" in art by the simple route of "what is." Philosophical questions do not always find their answers in current practice. Research that is undertaken in art education should be done from a point of view that takes into account the multidimensioned nature of artistic expression and form. Stated more simply, the sense of value to be developed should take into account the broad traditions of art as well as the art forms of the present. Indeed, it would be well to focus upon distinctions and differences in value systems as they provide a context within which artists work.

Time, space, and sequence factors as they structure artistic activity should take on added weighting in our research designs. Longitudinal studies of craftsmen would surely need to be viewed differently than studies of assemblage sculptors. When one projects study of artists and the processes in which they engage, there are critical differences in factors of fluency and flexibility in relation to the medium being utilized; indeed, the whole process of decision-making by the artist is intimately related to his ideas, medium, and values.

I have set forth some very general considerations derived from my experiences and observations. It seems to me that it is self-evident that continuing study of persons engaged in artistic activity in relation to their qualitative levels of achievement will surely prove a key reference point for projecting theory in art education.

XVII

A BRACE OF FINDINGS

by

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There are two findings of the Institute of Personality Assessment's program of research on creativity which I think should be of special interest to this conference. One finding is psychometric in nature and is based primarily on patterns of response to psychological questionnaires; the other is, in a sense, anecdotal, and is based on interview material in which the subjects of study reported in their own words the experiences they felt most important to their creativity. The first finding deals with the relationship between ego-strength and psycho-pathology; the second, with personal relationships and inner-experience that helped form purposes and commitments basic to the individual's philosophy of life.

The psychometric finding is an unusual one. In the general population, ego-strength is negatively related to such psychopathological tendencies as depression, extreme mood swings, intense introversion, rebelliousness, suggestability, and the like. In several of our studies of highly creative groups of people, however, we found evidence of many of these apparently pathological tendencies combined with considerable strength of the ego. In spite of their troubles, our subjects had high intellectual efficiency, good judgment, flexibility, foresight and motivation to achieve. Though apparently having more possibility of becoming psychologically disturbed, they also had the resources to deal with their own complex inner states and to capitalize on their conflicts rather than being immobilized by them.

The second finding may indeed be related to the first. Our subjects gave us reason to believe that their philosophical commitments were of overwhelming importance to them, more important than considerations of money, position, and even personal contentment or happiness. Moreover, these commitments often could be traced to a personal relationship of special importance--sometimes with a teacher, sometimes with friends or lovers, sometimes with an admired figure whom they had met only once or twice but who had made a profound impression. It was as though part of "the meaning of life" had been made by these relationships, and later moments of crisis in which the individual had to reaffirm his own course or stand up for his principles were met with courage and resolution because of the strength gained from the relationship and incorporated, whether explicitly or implicitly, in the individual's philosophy of life. As teachers we cannot overestimate the potential importance of genuine encounters in which we may help provide such a fundament.

XVIII

DISCUSSION OF THE CONFERENCE

A

Channels of Communication

for

A New Dialogue

Any fears that the 'twain, artist-teacher and scientist, could not or would not meet were groundless. Direct differences were freely aired and accepted with interest and respect--but not necessarily agreement. There was, in fact, an air of professional excitement in the proceedings which gave a fresh, stimulating meaning to the word "colleague." Rapport was established the first day. It was clear we were in this "lash-up" together--withdrawal symptoms were not in evidence. In short the first objective, the setting up of channels of communications for artist-teachers and behavioral scientists, was an operational fact in our conference. Further, at least one man said that progress of research on the arts in education depended on artist-teacher and scientist working together.

There were many expressions about the desirability of working together. A musician reported that he was ready to work with a graduate student in psychology, but not until the student had spent at least two years working in the field of music. The artist wants the scientist to come and "live in his country" like a cultural anthropologist. And a scientist indicated that the artist can be of help to him by helping "sensitize interpretations" in studies in the arts. "We won't get anywhere," another scientist put it, "without both sides of the fence."

Difficulties tend to arise when the artist feels that warmth and aliveness go out when the scientist brings in "mechanization." When the artistic enterprise is reduced to small units, rejecting the total response of the artist, the artist feels truncated in defeat. On the other hand, the scientist made some headway in explaining his work to the artist by explaining that he, the scientist, is concerned in testing theory by any means that work, and these means, as distasteful as they may be at times to the artist, are not designed to thwart him but to take a necessary step in scientific pursuit. So little is known about the artistic functioning of man that efforts to move into this area of the unknown may appear niggling or "mechanical." The scientist must content himself with knowledge, theory and instrumentation as it exists and then make his move. He does not mean that his move implies any more or less than it is. He submits to the artist that more sophistication on his part as to the nature of the limits and powers of the scientific enterprise may make his criticism and suggestions more useful.

Many of the artists asked how they could be more useful and welcomed the scientists to join them in a search for the way in which values--in this case artistic values--are transmitted to others. They were willing to collaborate on inventing more sophisticated instruments. In addition, a "something" happens between student and teacher in the arts, something beyond the level of partaking of information. One artist said that every artist is aware of this "psychological fact" and that it is crucial to the whole problem of teaching in the arts. Scientists are needed to help identify and understand this transaction between teacher and student in terms of their art.

The role of the scientist in a) basic research and b) applied research received some discussion contributing to the sophistication of the artist-teacher. This resulted in a growing respect for basic research which takes its own good time and is not to be confused with teachers' needs for practical help in such problems as early identification, the invention of tests of artistic skills and aptitudes, and the education of counsellors.

Twice one artist insisted that "art deludes any conceivable technique to catch the essence of art." The scientists simply replied that such a view negated science. One scientist said that he believed the idea that science could not "catch" or "touch" the creative act was due to the fact that psychological science, as yet, hasn't gone far enough into the human mind. A consensus grew out of this part of the discussion that scientists and artists can live, talk and work together to a point that understanding and meaning in their mutual interests does emerge. In fact a number of the conferees were loathe to leave, feeling that they had just achieved the beginning of a productive relationship. Accordingly I can report unequivocally that the ghost of incompatibility of art and science was neatly laid out by this group of scientists and artist-teachers.

B

The Educational System and Artistic Growth

While there were many implications for the role of our present educational system and artistic growth, (and they are to be found throughout the discussion) the conference did not take on this topic directly. On the other hand, the sociologists kept pressing for more attention to environmental factors--including "student cultures." And there was much said about guidance, counselling, and testing in the educational establishment. One answer to these and similar problems with education today was simply to side-step the whole educational "caboodle" by creating a new community where talented people, young and old of any age, would work in their own idio-syncratic fashion. This, desirable as it may or may not be, would still not solve the educational system's responsibilities to the arts, and some implications for the educational establishment are of extreme interest.

A scientist, though by no means alone, remarked that the arts were being "discriminated against" in that students for college entrance are selected by means of aptitude tests which are geared toward the science, social science and humanities student. Admission officers will have to change some of their admission methods if they are not to discriminate against the arts. Selection tests in creativity, however, are not ready yet--but they will come along. The school system is presently selecting students for the arts, willy-nilly, and research into the effect of current admissions practice at the level of higher education, early identification at the lower levels and guidance at the middle levels is sorely needed It was generally agreed that counselling and guidance at the secondary level was characterized by ignorance of creative behavior in the arts on one hand and of opportunities in the world of the arts on the other. "You can't get a job at it," is reported to summarize guidance information in the arts.

Again the discussion turned toward the possibility of tests revealing a Picasso at an early age, and it was suggested that such an individual, theoretically, would disclose a high degree of "outness" on some scale. This was challenged, and the talk turned to letting the Picassos take care of themselves. The educational system should be concerned with the great numbers who should have some experience in the arts rather than with the rare tyro artist. And this view, in turn, gave way to the suggestion that each child should be getting the education he, as an individual, needs for his own set of talents. This view stalled those who denied such a possibility as a "mute inglorious Milton," and there was a moment of sober, quiet reflection on the task it takes to produce an educational system which could and would meet the particular needs of each child as he grew. To me, the silence endorsed this goal--and the crying need for research to help along the way.

It is the school system's responsibility to identify and encourage artistic talent where it is found. And it is the responsibility of basic and applied research to suggest guidelines for the teachers, counselors, principals and school superintendents as to how this may be done. An example was given of one school system in a small city which is presently launched on doing this very thing by employing consultants to help principals, teachers and counsellors in working for creative behavior.

Usually school systems work exactly against those with a spark of creativity and hamper the expression of creative ability and drive it into seclusion or underground in the early school years. More evidence is needed on the use of open-systems of education coupled with more innovative techniques. In short, a sorting-out _is_ possible among adults as well as those in early childhood, but the process is just beginning to be understood. Research is only now developing tests of creativity which have predictive value. Thus the work is progressing at two levels: 1) basic research which is exploring the theory of creative behavior and 2) technical developments with tests in the schools which predict creative behavior and help foster it. In the meantime, the people teaching in the creative arts must educate the admissions people and the counsellors.

For the support and growth of arts in the schools, the research task appears to be 1) analyzing symbolic form 2) identifying the artist and 3) determining the process of education in light of the first two steps.

Presently the framework of higher education prevents creative work. The student-artist no sooner gets started in creative work than he has to quit and take up something else. The forms of education are perplexing to him. On his own he has to decide whether he wants a degree or not. Actually, the student-artist should be busy studying symbolics and have a place in our society suitable to the needs of an artistic career. This leads to a basic question--how do we restore the creative community--_and in the school system_? What an artist needs is time. The use of time, how to use time in the school day, is a researchable problem.

Another researchable problem was suggested to be this: What happens at that critical point when a young person rejects mass taste and begins to discover the great culture available to him in any of the arts? What, when, how does he discover this new world, and to what new employment does he put his discovery? This sort of knowledge would be of incalculable value to teacher and counsellor.

Here, then, are some of the implications for school systems. Perhaps the best recommendation that can be made is for school systems to employ consultants who will help them devise ways to change to a more open-system which helps teachers, counsellors and the whole educational array to recognize and encourage talent more readily and sensitively.

C

Areas for Research

There were a number of expressions about conditions for research on creative behavior in the arts. Some of them have been mentioned earlier but deserve repeating for emphasis.

The artists felt that study of behavior in the arts should be studied like the virus--in its own living cell. This also implied that creative behavior in the arts must be studied in each art separately, the musician in music, the dancer in dance, the painter in visual art and so on. Considerable agreement collected around the concept that this meant a study of symbols or symbol-making. If the symbols for each art were the same, then there wouldn't be such a thing as music, for example. Content may be the same in music, poetry, painting or acting but the form is different and cannot be "translated" from one art to the next. This reinforced the idea that the study of symbol-making was an extremely important course for research to take.

Again it was emphasized that although symbol-making was common to all the arts, the symbols were different in each and each must be studied "in its living cell." This would help answer some of the criticisms of the artists that many of the tests in the arts were constructed with artifacts which were "bad art." Judgments, then, as to which was "better" led to meaningless research. "The essence of an art-object is bound up in its medium." Further, a test keyed to consensus is going in the opposite direction of creativity.

An attempt to apply Occam's Razor to fractionate a difficult problem was made with a suggestion that educational research should discard the Picasso, the Mozart, the Nijinsky or the Eugene O'Neill and turn the forces of research on "the simple kid. Education's biggest problem was teaching children, not serving as an incubator for the genius who was self-motivating anyhow. This argument led naturally to the old question concerning the possible existence of such a being as a "mute inglorious Milton." Didn't great talent discover itself anyway? There was no "position" taken on carving the "simple kid" from "the boy Picasso," and there was a suggestion of a "radical discontinuity" here. The degree of "outness" of a Picasso, however, could be conceived as being on a dimension also to be found in the "simple kid." Then a point was made that education was responsible for all children and that the child should be the primary source of determining his education rather than the system of education he may find himself in. Clearly we must have more research into the growth of children in their use of the arts, the better to serve both "the simple kid" and "the boy Picasso."

Correlative to this was the agreement that the artist--at least at a certain point in his life--does "elect himself" to follow his own pursuits. But what strengths in himself does that child need to hold such an election? And how can they be developed? Neither authoritative guessing nor the phenomenological approach satisfied all the conferees on this question, and encouragement of research into the forces that combine to deliver a first-rate artist as well as the ordinary citizen who enjoys, rejects, or corrupts artistic experience is to be strongly supported.

In the view of some, a body of knowledge already exists in the area of creativity sufficient to make pediogical changes in teaching--from nursery school up. Some school systems, in fact, are in the process of putting the present knowledge of creativity into educational practice. A valuable piece of information could be made by reporting these efforts in the schools and collating them into a report. Thus the reports of real changes in the classroom on the part of both pupils and teachers would become available.

The whole area of tests and early identification was returned to time and again. Theory, criteria, validity, reliability and utilization of tests in the area of the arts were challenged and supported. The need for an effective testing program in the arts was emphasized, especially in light of the greater number of students in the schools every year and the resulting need for selection. The sorting problem is a gigantic one. The upshot of all this discussion indicates that a rigorous and comprehensive study of test-making and test-utilization in the arts would be extremely timely. Perhaps there hasn't been enough development of theory until now to make such a study possible. But a penetrating book coming out of such a study emphasizing converging lines of research in creativity in the arts could make a contribution of great immediate practical value to the educational process today as well as to heuristic value for the development of promising new approaches for test-making in the arts. Data language alone needs a thorough discussion to help cut short superficial thinking and ineffective approaches to test-making.

The need for adequate conceptualization of what an artist does when he's at work and what motivates him focused on the need for basic research. A suggestion for one way of attacking these problems was to set up a 3-step process: 1) Analyze symbolic forms, 2) Identify the artist, and 3) Determine the process of educating the artist to use symbolic form.

The place of the artist in contemporary society--or contemporary societies regard for the artist--received considerable attention. The sociologists continually insisted that the artist would not, could not, be served without dealing with the society in which he grew. The artist will not succeed regardless of social conditions. Artists must be prepared for "reality." What percentage of our talented artists can our society accept? What are the opportunities in light of the fact that in a given year 600 short stories were published from 90,000 which were submitted? Should an artist be sure of a professional place in society before he enters his field of endeavor? Why does an artist have to make a living at his pursuit? Is the role of an amateur in the arts quite decent? What can be done to extend the democratization of the artist and to extend an appreciation of his work and status in our society? What is the effect of mass merchandising in the arts? What constitutes the sum of the social and economic forces affecting the artist? How are the arts used by "teen-age society?" And, finally, how can the artist regain his normal place in society?

Obviously, from this flurry of questions, the sociologists see a wide spectrum in the colors of sociological research in the arts area! The problem may be to see the opportunities as challenging rather than staggering. In any case, the need is to make a sound start.

One point for research that received total agreement was based on the evidence that early deprivation in experience--and in this case the artistic experience--is never made up. This indicated more studies in creative behavior in the arts before the age of six and implied that laboratory schools at the nursery school and kindergarten levels may be as out of balance in work in the arts as higher education. Fortunately many studies of the teaching of mathematics, reading and science in the early years is going forward, but this cannot be said for the arts. The conference underlined the urgency for attracting research in the arts during the early years.

The desirability of coordinated research was made with the statement that the problems of identification, selection and curriculum building went hand-in-hand. This brief comment served to repeat the need for a frame-of-reference in which to work. Unfortunately the conference didn't get back to viewing this need, but the implications are great and demand quantities of further study.

Broader questions again emerged, particularly about the differences and commonalities to be found in the arts. For example, "spontaneity," "intuition" and the perfecting of skills are common to all, but the commonalities may not clearly emerge operationally in an identifiable way in each art until we develop a language for each of the arts. If the languages for each were understood, it may then be possible to isolate differences and commonalities. We should know, for example, how "openness to experience," "flexibility," and "discipline" works operationally in each of the arts.

In our present society, the artist apparently creates his own learning process--he sets up his own living cell for learning his art. Is this simply a reaction to a hostile society and system of education, or is it a necessary aspect of learning an art? If the latter, how can education set up a "self-realization plant"? In any event, the artist exercises his talent and learns. Then, it follows, he can be taught. How can we help him?

Two events were identified in which teaching does occur and which teachers can learn to use. The first is the previously mentioned "something" which transpires between student and teacher or between therapist and client when a creative experience in working for an expressive act occurs for the both of them.

Both student and teacher experience a personal change of a sort that is deep and lasting. They have learned something together. Perhaps this is the basic ingredient in the apprentice-master experience. Through research the nature of this transaction should be more fully understood and made available to the artist-teacher. The significance of this event for teaching in the arts is hard to over-estimate.

A second finding of significance for the growth of the artist was reported. On tests, artists have shown their "sensitivity" on scales that would indicate an extremely neurotic or pre-psychotic if not psychotic individual. Unlike a psychotic individual, however, the artist is high on "ego-strength" whereas the psychotic is low. The implications for the education of the artist, then, is clear. During his growth, he must encounter experiences that deepen his sensitivities and strengthen his ego. Fortunately attention is beginning to be paid to this in the literature on creativity, but educational research clarifying the process to the point of changing curricula as well as teacher preparation is desperately needed.

Perhaps the most serious, basic decision to be made for the realm of research in the arts appeared in the conflict between the "molar" approach, the whole man responding totally to artistic encounter, espoused by the artist-teacher and the "mechanized," fractionated approach introduced by some of the scientists. A quote from Charles Sanders Peirce in his essay, "Man's Glassy Essence," may help clarify this basic choice one may have to make in pursuing research in creative behavior in the arts--"The attempt," Peirce said, "to deduce it (i.e. the property of feeling) from the laws of mechanics, applied to never so ingenious a mechanical contrivance, would obviously be futile. It can never be explained, unless we admit that physical events are but degraded or undeveloped forms of psychical events."[1] Although I may be guilty of overstatement, the choice might be characterized by the "brass instrument approach" on the one hand and the "art-as-art approach" on the other. It is exciting to think that we may be on the verge of making meaningful progress towards developing evidence for making this decision, thanks to the contributions of scientists who are working daringly in the challenging slipperiness in the field of expressive behavior in the arts.

D

The Feasibility of a Longitudinal Study

From the title of the conference as well as the advance notices, the conferees knew as well as I that the one specific charge to the conference was to assess the promise of a long-range longitudinal study of expressive behavior in the arts. Yet no one directly introduced the subject into the discussion periods except for occasional references. There seemed to be an unspoken multilateral agreement to enforce an embargo on the subject. But I was patient, until the last day, and I directly confronted the group asking for any volunteers for a flat "yes" or a flat "no." I got one of each. The negative response was based on the possibility that a long-range longitudinal study could get off on the wrong foot and stay there. The one affirmative maintained that there was enough theory, instrumentation and experience at hand to launch a longitudinal study and that the contribution of longitudinal studies in other areas had made significant contributions to education. The rest of the group simply weren't ready to take a position, and I did not seek responses under compulsion. One comment offered the view that the instrumentation simply wasn't sufficiently well developed as yet. The "tote-board," as I read it then, offered one clearly for, one clearly against such a study, and eighteen favored more thought and study. It would, in my opinion, be definitely profitable to pursue a follow-up meeting on the subject, with a small number from the same group, to reassess the potential of a long-range study.

Despite the lack of a "yes-or-no" consensus, there were some valuable observations about a longitudinal study strung out through the discussion. For one thing epistemology in the arts is obscure, and following children who turn out to be first-rate artists may reveal more evidence as to how they learn than trying to reconstruct this process in retrospect. On the other hand, could a longitudinal study be undertaken while change is going on at a high rate in the realm of research? True as this may be, how else could knowledge be gained as to how the artist is formed and deformed and as to what patterns may appear in the young and developing artist than by following his life-course as it happens?

One aspect of a longitudinal study which might well contribute to educational practice in the arts for both artist and consumer is suggested by other studies indicating that those suffering from early deprivation can never make it up. Fairly short studies of pre-six year olds in laboratory schools, for example, could indicate what rich experience in the arts compared to deprived experience in the arts among two-to-six year olds would do to their artistic experiences from ages six-to-twelve.

To prepare for a longitudinal study in expressive behavior in the arts, it was suggested, as mentioned earlier, that it would be necessary to develop a vocabulary for each of the arts. This would permit the artist to describe the way he relates himself to his artistic experience. Then this experience as described can be looked for in youngsters. Whether this is upside-down or not may not be important as emphasizing the need for some kind of appropriate lexicon for each of the arts. This is an especially interesting idea since the essence of an art is non-verbal. A non-verbal lexicon may have to be invented for the arts to prevent substituting one artistic experience for another.

The case for a long-range longitudinal study, then, is still a matter for deliberation but worthy of continued pursuit. In the meantime shorter longitudinal studies, as suggested with the pre-school child and his entry into the elementary grades, may prove important. Development of theory, instrumentation and data language to underpin a long-range study is to be encouraged.

E

Alternative Proposals

In the midst of a thoughtful slough of unresponsiveness to the prospect of a longitudinal study, I ventured to observe, "Maybe what we are edging up to is a study of the ecology of the artist." The response was galvanic, and as thorough a consensus as the group demonstrated for anything. It seems to me that the reason for the response is that the ecological approach included the sum of the interests of most, if not all, of those present. The concept of the individual growing artist responding to his environment and his environment responding to him contained all the variables concerning the embryo artist the conferees were carrying in their heads. And the consensus endorsed the idea that an ecological study of the artist could be undertaken.

It was not the business of the conference to undertake beginning steps to shape up such a study, but the conference clearly warmed to the attractiveness of the idea. Accordingly I can report as one of the important outcomes of one meeting that the development of research studying the ecology of the artist is strongly recommended.

Other alternatives to a longitudinal study were not expressed, but it is worth repeating that there was a growing interest throughout the meeting as to the nature of symbols and symbol-making in the arts. The promise of rewarding research in this area seems high for contributing to the further study of creative behavior in the arts.

Research in physics has starred on the world's stage in the last fifty years with biology about to take over due to the remarkable discoveries provided by research in that field. What dazzling, humane, innovative changes in our society might be brought about by comparable attention given to the burgeoning concern for the arts in our country? If education can be used effectively to serve the artist and his audience, what a galaxy of new, stimulating encounters may we expect!

F

A Summary of the Discussion

The Conference on a Longitudinal Study in the Arts did not come up with an endorsement and development of a single study--but it was yeasty.

Fields for meaningful research in the arts abound with stimulating problems. And, more specifically, some outcomes of the conference can be summarized to advantage:

The Artist Teacher and the Scientist

1. Artist-teachers and behavioral scientists can communicate, and the members of the conference freely agreed that a continuing dialogue between the two is vital to the productive growth of research on creative behavior in the arts.

2. If the scientist is going to do research in the arts, the artist wants him "to come and live in his country"--like a cultural anthropologist.

3. By making an effort to understand the scientific method at a fairly sophisticated level, the artist can offer criticisms and suggestions which can be much more meaningful to the scientist.

4. The artist inclines to the "molar" approach of investigation, feeling cold and truncated when "mechanization" is introduced in the study of artistic discovery.

5. Artists are interested in collaborating with scientists to search for the ways artistic values are transmitted to others and to assist in inventing more sophisticated instruments for investigating artistic behavior.

6. The artist-teacher is learning to discriminate between a) the scientist's basic research, his pursuit of theory, and b) applied research into the practical needs of education like early identification and the invention of tests of predictive value.

The Education System and the Arts

7. Education is faced with the problem of seeking methods to change the hostile environmental factors of the present educational system to those which will encourage creative expression.

8. In higher education, admissions practices discriminate against the artist; therefore these practices must be changed to include screening for the arts as well as for other areas.

9. Counselling and guidance at all levels--but particularly the secondary level--must study and apply current research as a basis for advising students in the arts rather than cling to embedded folkways concerning the arts in education.

10. Education must seek ways of serving the individual student rather than the system so that schools and colleges may serve the rare, developing artist as well as the individual among the larger numbers of those in his potential audience.

11. School systems can make changes toward more open-systems of education with the help of consultants who are not only up on current research in creative behavior but are skilled in helping superintendents, principals, teachers and counsellors install new techniques which seek and encourage creativity.

12. The artist needs time in different shapes than those sliced up by higher education. Research into ways of using time for the artist-teacher and his student is needed.

13. Provisions for the young person who rejects mass taste and begins to discover on his own the great culture available to him in any of the arts must be devised.

Areas for Research

14. It was postulated that one of the conditions for research on creative behavior in the arts was that each art must be studied separately in its own terms: dance as dance, music as music, painting as painting, acting as acting, writing as writing and so on.

15. Tests keyed to consensus in the arts are going in a direction opposed to creativity.

16. Study of the making of symbols in each of the arts was strongly endorsed. ("The essence of an art-object is bound up in its medium.")

17. Studies into children's growth in creative behavior in the arts is strongly urged to give a sound base for serving both "the simple kid" and "the boy Picasso."

18. What are the forces in an individual which lead him "to elect himself" to follow his own pursuits in the arts?

19. A critical study summarizing all the present work on creativity along with an evaluation of efforts to apply this work to educational practice is due.

20. Similarly, a rigorous and comprehensive study of test-making and test-utilization in the arts would be timely and extremely helpful.

21. Although an integral part of 19 and 20 above, a study of data language employed in investigations of creative behavior in the arts may be worth an independent study.

22. A comprehensive attack on creative behavior was suggested by this three-step process: 1) analyze symbolic forms, 2) identify the artist, and 3) determine the process of educating the artist to use symbolic forms.

23. Emphasizing the point that the artist will not succeed regardless of social conditions, the sociologists suggested a whole range of questions: what percentage of our talented artists can our society accept? Should an artist be sure of a professional place in our society like the M.D. before he enters his field of endeavor? Is the role of an amateur in the arts quite decent? How can the artist be "democratized"? How can society learn to appreciate the artist's work and give him status in our society? What is the effect of mass merchandizing in the arts? What constitutes the sum of social and economic forces on the artist? How are the arts used by the "teen-age society"? How can the artist regain his normal place in society?

24. Studies of creative behavior in the arts before the age of six in laboratory schools was strongly endorsed.

25. Coordinated research on the problems of identification, selection and curriculum building were urged.

26. Understanding the function of "spontaneity" and "intuition" vis-a-vis, rigor and discipline would be a great contribution to teaching in all the arts.

27. Under what conditions can the artist "set up his own living cell" for learning his art?

28. Is a "community of artists" at all levels of education, or at any level of education, possible and desirable?

29. Increased knowledge of the nature of the event that transpires when both artist-teacher and student-artist mutually discover a creative experience in their work promises to be a significant contribution to teaching and learning in the arts.

30. Knowledge of the nature of encounters which build ego-strength along with "far-out" sensitivities and abilities in the arts constitute another significant area for educational research.

31. A primary critical decision in research in the arts may be the one to decide whether to use the molar or macro approach demanded by many artist-teachers as against the "brass instrument" and fractionated approach employed by some behavioral scientists. This may or may not be a false dichotomy. Critical experiments investigating this problem could contribute to the evidence needed for making the decision.

The Feasibility of a Longitudinal Study

32. More thought and study is necessary before the promise of a longitudinal study of expressive behavior in the arts can be effectively assessed. Members of the present group, as well as others, may profitably re-assess the potential of a long-range study in the near future.

33. Development of theory, instrumentation and data language to underpin a long-range study is to be encouraged.

34. Shorter longitudinal studies, for example in the early years, may prove important.

Alternative Proposals

35. The idea of a study of the ecology of the artist carries great promise, and pursuit of this idea is strongly urged.

36. Studies of the nature of symbols and symbol-making offer promises of heuristic value to educational research in the arts.

Footnotes

1. This quote is taken from an interesting discussion of these matters in Frank Barron's book, Creativity and Psychological Health, p. 246.